Towards an Understanding of the Antecedents of Influence in Virtual Communities

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"Towards an Understanding of the Antecedents of Influence in Virtual Communities"

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Abstract:

Analysis of online social network traffic can identify a cascade as it flows through a community but, often, the reasons for its initiation are tacit. Commercial measures of online influence focus on the consequences of influence not the causes and have been criticized as lacking efficacy. This research uses social capital and personal influence theories to investigate the characteristics and behaviours that allow certain network nodes to be able to cascade ideas (or memes) through networks.

The relationships between structural, relational and cognitive sources of social capital and two distinct dimensions of influence are investigated using: interviews with experts in the field, focus groups of social network users and 1,970 respondents from three large-scale online communities. Data has been analysed using Structural Equation Modelling (SEM) and allows the researcher to develop robust conclusions on the antecedents to influence. These help to explain recent contradictory findings by different researchers in studies using Social Network Analysis (SNA).

The dimensions of influence measured are: respondents' intention to propagate the message and; the extent to which the message has affected their perception of the subject. The model of influence that leads to both dimensions is strikingly similar; presenting strong support for the notion that contagion-based cascades through networks are predictors of perception change. The paper proposes a bridge between the theories of social capital and personal influence and this is considered an original contribution to these well-established theories.

Techniques are suggested which can help organisations to identify opinion-leaders and, if required, subvert or redirect the nature of their influence. Other applications are considered in the fields of: Innovation (identification of lead users); Virtual Organisations (engaging with informal leaders and influencers in networks); Cyber-Defence (identification and subversion of online radicalisation).

Engagement:

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Contents:

1 Introduction

In the past five years, the use of virtual communities (VC), for example social networking sites (SNS) and online forums has become widespread. These services encompass a range of different resources which allow users to create and share their own content, as well as to discuss or rate that of others. Examples include social networks (Facebook®, You Tube®), blogs and micro-blogging sites (WordPress®, Twitter®), news aggregators (Digg®, StumbleUpon®), special interest forums (DP Review®, The Student Room®, MS Zune®) and, more recently 'content curation' sites (Pinterest® and BO.LT®).

For consumers, these media can provide access to product/service reviews to inform purchase decisions (Valos, Ewing and Powell, 2010). For firms, these communities have been highlighted as being important channels both from the perspective of direct promotion and electronic-word of mouth recommendations (Hung and Li, 2007, Kozinets et al., 2010).

The influence exerted by opinion-leaders on their peers within their social networks has been the subject of scrutiny since the 1950's (Katz and Lazarsfeld, 1955; Cialdini, 2001) but has become the target of much practitioner interest recently. A number of commercial organisations, such as Klout® and PeerIndex® have developed algorithms to track and measure online behaviour: a process known as 'social scoring' (Schaeffer, 2012). These firms (and others) make social scores available to brands who may offer perks such as vouchers or hotel upgrades in order to encourage positive comments from opinion-leaders (Solis, 2012).

However, such services have been criticised for lacking in robustness. Given that these scores often measure the number of connections across a range of online networks and the response an individual receives to his or her content, it is argued that they measure the *outcomes* of influence rather than the *antecedents* (Solis, 2012).

While academics have been interested in the analysis of 'cascades' of information through social networks, relatively scant resources have been expended on understanding the causes of online influence.

The purpose of the present research is to contribute to this under-researched area by identifying the causes of influence in virtual communities. Specifically, the study has measured the accumulation of social capital by posters within such communities. Further, it assesses the extent to which these contribute to an individual being able to change their peers' perceptions of a subject as well as the likelihood their message would be passed along. The research question is outlined and justified in Chapter 3:

RQ: What combinations of post and poster characteristics affect influence within a community of interest?

The project initially employs qualitative methods to evaluate the context: interviews with prominent bloggers, social media experts and community managers led to a thorough understanding of the environment. Then, focus groups were conducted, which shed light on the community members' view of online influence. This phase allowed the researcher to develop and refine a conceptual model which was tested by asking members of three major global communities to complete an online survey measuring the constructs in the model. Results were analysed using Structural Equation Modelling (SEM) and robust results were found.

1.1 Contribution

The study contributes to the body of knowledge in this important area in a number of ways.

From a practitioner perspective, the study shows strong links between the viral progression of a message and its ability to change its readers' minds, which supports existing literature and conventional wisdom. However, a number of key differences are evident which mean that absolute faith in the notion that if a brand message 'goes viral' it automatically can be assumed to have left a lasting impression with the viewers is misplaced. Further, the adoption of traditional rules from other marketing disciplines, such as advertising, may have limited effect: nuances in the expectations of members of VCs mean that normal rules of brand communications may need greater adaption than previously thought.

The study contributes to both social capital and personal influence theories by making the nature of their intersection explicit. It is argued in Chapter 3 that social

capital is a fungible resource which can be accumulated in VCs and may be exchanged for uninvited, purposive influence. While opinion-leadership has been previously linked with social capital, this has been from the perspective of an information-seeker reaching out to a network contact for guidance (Burt, 1999), which leads to an accrual of social capital by the latter. However, to date, no attention has been paid to influence being an explicit way to expend social capital.

1.2 Research Context – The Social Web

The many-to-many communication model that is a feature of the Internet has dramatically changed marketing practice (Hoffman and Novak, 1997). The consumer now has the ability to create and promote content and to reach a wide audience using this medium (De Valck et al, 2009).

'Social Consumers' are understood to behave differently to their offline counter-parts; they are highly connected and expect information on demand. They share knowledge and insights while socialising with peers. From brands, they expect transparency and authenticity and are prepared to reward this with public statements of support (Greenberg, 2009).

The traditional view of the community has been contingent upon geographical proximity (Wellman and Gulia, 1999). However, in the context of Computer Mediated Communication (CMC) the term 'virtual' allows a person to communicate and interact with others globally, often with no physical contact (Handy, 1995; Hiltz & Wellman, 1997). Such communities are often formed around shared interests (Figallo, 1998; Kilsheimer, 1997). As a result of the ability of VCs to influence people's perception of products and services, they are seen as important tools which can be exploited by marketers for commercial gain (Pitta and Fowler, 2005; Porter, 2004).

One feature of such communities is the ability of users to turn individual posts into 'threads' by responding to an original point and extending the discussion. In active communities, some threads may extend to many thousands of messages and often discussion only stops when the community loses interest in the subject. However, the importance of this feature is that the header of the thread (that is, the title of the

original message) is searchable both inside the forum and via search engines, meaning that: (1) the information is available to a very wide audience and; (2) that the content of the thread is available for a significant period of time (Pitta and Fowler, 2005). This is critical for firms as, often the top search result is from a community of this type, meaning that consumers may access community generated content more readily than brand-generated messages.

The first iteration of the World Wide Web in the 1990s was essentially a set of connected documents. This was transformed by 'Web 2.0' which presented a way for people to connect to each other and where social interaction was 'bolted on'. The web is currently undergoing a new development where sites are being re-designed around "social behaviour" (Adams, 2010: p8) and where consumers have a much greater degree of control and influence.

We live in a world where more and more businesses connect their online proposition to a range of social networks and where "citizen influencers" (Schaeffer, 2012:p3) can change people's perception of brands or products, for better or worse. It is critical to understand the behaviours of such individuals in order that we can identify them, emulate their techniques and, if necessary, subvert their influence.

There is much evidence that suggests that VCs are an important source of information in the consideration phase of purchase decisions (Dutton and Blank, 2011). Further, because discussion threads are indexed and therefore 'searchable', information held within them is widely and readily available for this purpose (Weinberg and Pehlivan, 2011).

This leads some to conclude that e-WOM is more important than traditional forms of the phenomenon (Phelps et al, 2004). However, it is recognised here that e-WOM is merely one way in which consumers can communicate their opinions related to brands with whom they interact and as such is supplementary to (rather than more important than) its offline equivalent.

Brand communications is not the only discipline that is interested in these Influentials: for innovation managers, understanding which members of a community can represent the ideas of many others is critical; for organisational

development, an understanding of the influential members of large virtual organisations is important, and; for governments wishing to identify individuals within online communities who may seek to radicalise other members, this is an important area.

1.3 Conceptual Foundation – electronic-Word of Mouth

The existence and effects of "Powerful networks of interpersonal relations existing within the consumer market" (Brooks, 1957: p154) have been found to be important sources of information regarding products. This phenomenon is known as Word-of-Mouth (WOM) and has been the subject of much research. It is noted to stimulate brand awareness as well as the propensity to purchase products (Whyte, 1954; Gray, 1973; Rogers, 1995). WOM is seen to supplement mass-media communications from brands and is thought to be particularly important in changing consumer attitudes (Engel, Kollat and Blackwell, 1969). The role of advertising has been found to create "preconditions for success… [whereas the challenge of] …creating and reinforcing favourable attitudes largely rested with the brand to generate favourable word of mouth communications." (Day, 1971).

As well as describing the phenomenon of individuals informing their friends and acquaintances of new products, WOM sometimes involves making explicit recommendations (Arndt, 1967; Day, 1971).

The adoption of the Internet into daily use by an ever-increasing global population (Dutton and Blank, 2011; Pew Research Centre, 2010) has caused a significant shift in the effects of WOM in both a pre- and post-purchase context (Hennig-Thurau et al, 2004; Dellarocas, 2003; Hung and Li, 2007). Electronic Word-of-Mouth (eWOM) has been established as an important complement to other forms of promotion (Trusov et al, 2009) and has been argued to be an important tool for twenty-first century marketers (Reicheld, 2003; Kelly, 2007). E-WOM is argued to be more influential than traditional WOM due to its speed, ease-of-access and use, the potential to reach a wide audience with a single message and the lack of pressure present in face-to-face communication (Phelps et al, 2004).

As the Internet becomes ubiquitous, the potential for individuals to influence the perceptions and purchasing habits of other users increases. According to a series of studies by Christakis and Fowler (2008) we are able to influence within 3 degrees of separation from ourselves. In their example, if an individual has 20 connections in his or her social network, this means he or she has the theoretical potential to influence 8,000 people. However, in the world of the Internet, these numbers are potentially amplified. For example, one prominent blogger interviewed as part of the present study has 500+ LinkedIn® connections, is in over 1,000 Google+® circles, has 7,000 followers on Twitter and many regular readers of her travel and food blog. It is very possible that her recommendation of a hotel or restaurant may influence many more than 8,000 in one degree of separation alone.

Katz and Lazarsfeld (1954) were the first to study the roles of opinion-leaders in communities and concluded that their influence tended to be limited to a single domain. This argument was extended by Feick and Price (1987) who presented compelling evidence that influencers were able to alter people's perception across a range of subjects.

The ready availability of network data which can be modelled using computer software has led to the development of a range of new techniques in recent years. The aim of these is to focus on the relational aspects of the network structure (Scott, 1992). Early studies in experimental networks suggested that the key to influence was simply the number of audience members available to an individual. However, these findings have subsequently been questioned by researchers who have access to large volumes of field data (Cha, 2010; Lescovec et al, 2007). However, SNA is methodologically incomplete insofar as it can identify the *initiators* of cascades but not necessarily the *causes*.

As well as being grounded conceptually in the WOM literature (online and offline), the present study informs this debate by identifying the antecedents of influence online, allowing the author to suggest ways to identify, emulate and perhaps interrupt influence online.

1.4 Theoretical Framework - Social Capital in a Connected World

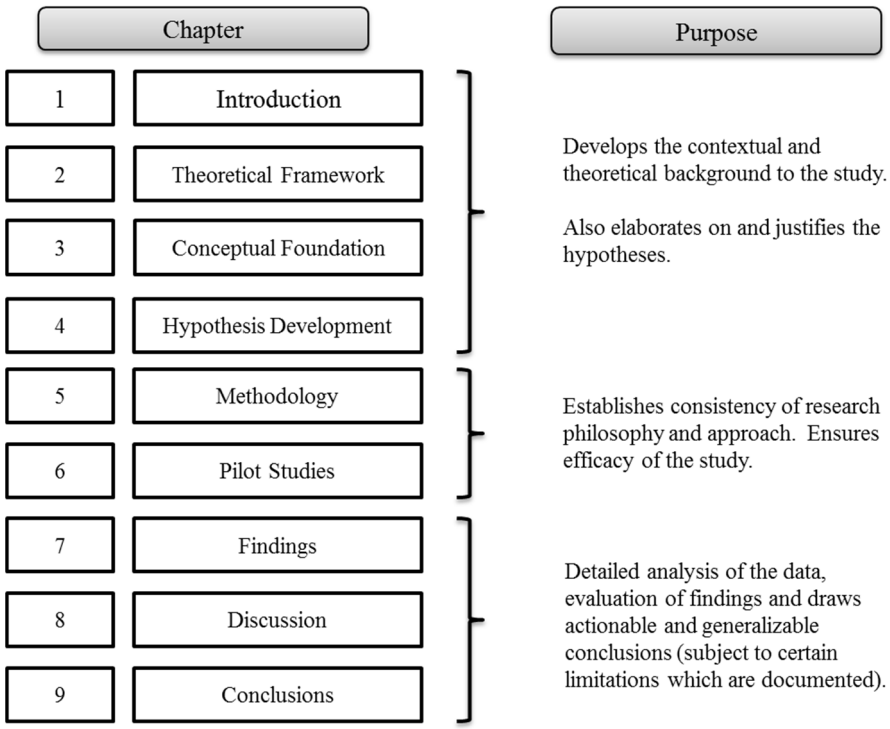
Social capital can be accumulated in a community, leading to its 'owner' holding a position of prominence and establishing resources that can be exploited for personal gain.

According to prominent social capital theorists Nahapiet and Ghoshal (1998), it is generated by three sources: Congitive (information exchange); Relational (friendship and sharing) and Structural (participation creates networks). Interestingly, similar dimensions have been outlined by Arguello et al (2006) as key primary motivators to initially join and to sustain involvement in VCs. In in this way, the measurement of social capital to establish positions of distinction within a community is appropriate.

Social capital theory is important to this study because it intersects with personal influence theory. Social capital is a fungible resource and an argument is made here that, as well as being exchanged for favours, the owner can expend it through uninvited, purposive influence. This proposition is explored in detail in Chapter 2.

1.5 Document Structure

Figure 1.1 – Document Structure



2 Theoretical Framework

Social capital is a sociological concept that is analogous to economic theory where members of networks can exploit connections with others for reciprocal personal gain (Bourdieu, 1986). Personal influence refers to a communication process from one individual to another, which may result in a measurable change in attitude of a temporary or long-lasting nature (Kelman, 1958). It is distinguished from types of social influence such as peer-pressure and conformity to legal and societal norms. This chapter explores the foundation of these theories and suggests how they may be interrelated and frames the theoretical elements of the present research.

Social capital theory has been discussed in relation to online community by a number of scholars, notably Wellman et al (2001) and Lin (1999) and it has been well established as an appropriate framework with which to understand the reciprocal behaviour that supports and governs virtual community interactions. Personal influence theory is less well established in connection to Internet communications, although it has recently been subjected to much scrutiny in this context using social network analysis (SNA) with no common theme to theorists' conclusions. Both social capital and personal influence are important theories to support the aims of the research as outlined in the previous chapter.

The key arguments of this chapter are summarised by two related propositions. First, that social capital can be accumulated within a community, leading to the subject holding a position of prominence (e.g. opinion leadership) and establishing relational, structural and cognitive resources, through which it (i.e. social capital) can be exploited (Burt, 1992; Portes, 1998; Nahapiet and Ghoshal, 1998). Second, that social capital is fungible and, as well as exchanging it for favours, the 'owner' can spend it by exploiting the social capital through uninvited, purposive influence, perhaps for personal gain or on behalf of a third party, for example a favoured brand or political cause.

Social capital and personal influence theory overlap with marketing theory in the concept of word-of-mouth (WOM). This is where firms attempt to manage and engineer the flow and valence of communication about their brand, products and services as information passes from one person to another. The context of such

information in this study is Internet based communication, particularly within Virtual Communities (VC). Both conceptual areas are discussed in Chapter 3, where links are established with social capital and personal influence generally and, more specifically, the propositions outlined above.

2.1 Social Capital

Much of the body of literature focuses on the *accumulation* of social capital, leaving as implicit the idea that it can be *expended* in return for favours, services or, as is argued here, in the form of influence.

2.1.1 Theoretical Grounding

Social capital theory has been used as a lens through which to view a wide range of studies on topics as diverse as civic responsibility and college entry. It has helped explain phenomena ranging from poverty in ethnic minority communities at one end of the economic scale to CEO compensation at the other (Coleman, 1988; Lin, 1999).

The theoretical foundation of social capital is attributed to Alexis de Tocqueville's report of his two-year tour of America in 1831-1833 (De Tocqueville and Reeve, 2000) leading to him being referred to as the "patron saint of contemporary social capitalists" (Putnam, 2001: p292). However, current thinking on social capital is more accurately summarised as recognition that there are self-organising networks of relationships based on reciprocity which, in aggregate, underpin the nature of social and political life (Durkheim, 1893; Durkheim, 1933). The term social capital itself was initially described in terms of tangible assets such as "goodwill, fellowship, sympathy, and social intercourse among individuals and families who make up a social unit" (Hanifan, 1916 quoted in Keeley, 2007: p102).

The concept gained popularity in the social sciences towards the end of the last century. Early studies focused on the way members of the elite classes in France related to each other to enjoy the benefits of their status. This led to the development of the concept of 'habitus', in which individuals create a cognitive structure that governs their way of thinking (Bourdieu, 1990). Individuals inhabiting similar social structures are likely to have similar tastes, perspectives and sensibilities and that inequality was largely entrenched, making mobility between social classes

challenging (Bourdieu, 1990). At the other end of the social scale, studies of educational attainment in American ghettos demonstrated that social capital could significantly benefit marginalised elements of society. The effect of reciprocity was critical, leading to a higher degree of trust between people with close relationships as well as in wider communities (Coleman, 1988).

The works of the dominant theorists can be separated into those who consider social capital to be an exclusively individual concept (for example, Lin, Burt and Coleman) and those who consider it to be either available to individuals or groups equally (Bourdieu and Putnam). The 'individualists' consider social capital to come from access to embedded structures within social networks. The 'individual / group' theorists consider social capital to be the reciprocal relationships and solidarity within groups, leading to trust in institutions and ultimately society itself. The study has been designed from the 'individualist' perspective which states that social capital can be generated, accumulated and expended.

2.1.2 Relationship between Human, Reputational and Social Capital

Human capital indicates the way an individual can accumulate surplus value by personal traits and investment in knowledge, skills and technical expertise (Lin, 1999). Human capital can be considered to be one of the 'four pillars' of production: land, labour, financial capital and *enterprise* (Keeley, 2007). A definition is proposed for human capital as "the stock of economically productive human capabilities" (Behrman and Taubman, 1982: p 474). It is distinguished from labour and has been adopted by the World Bank as a core component of intangible residual capital (2006).

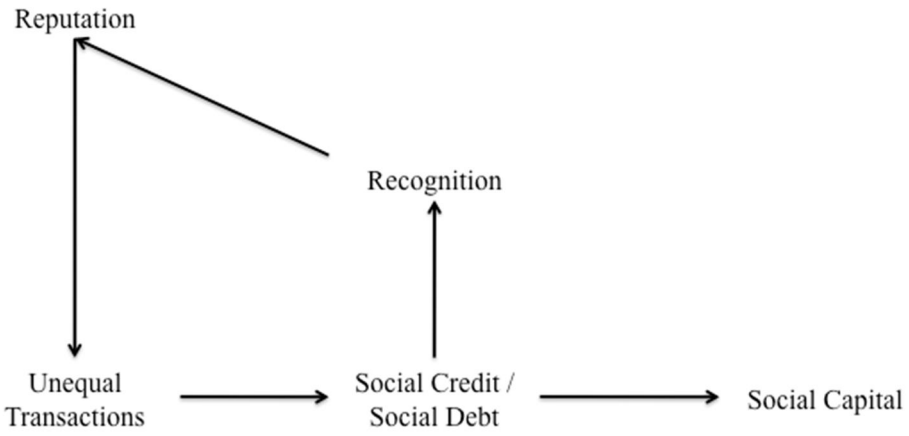
There are three key criticism of the concept of human capital: first, some question the idea that investment in education and skills development leads to economic growth (Keeley, 2007), arguing the reverse, that affluence leads to increased investment in those areas. Second, it has been argued that human capital leads to 'credentialism' meaning, for example, that individuals with degree qualifications are awarded jobs due to their award rather than because of any special abilities. Finally, it has been argued that human capital treats people as machines and that people are dehumanised as a result (Keeley, 2007). While these criticisms are not fully

rejected, their effect is argued to be minimal and the separation of human capital and earnings from other forms of wealth adds sufficient value to outweigh the disadvantages (Becker, 1994). Further criticism can be inferred from the interpretation of Bourdieu's conception of Cultural Capital embodying the desire of the elite classes to impose their 'habitus' on others through "pedagogic action (e.g. education)…thus reproducing the salience of the dominant culture" (Lin, 2002: p14). However, the preferred perspective in relation to this study is of individual choice of action rather than on education as a device to extend the authority of a particular class.

The key connections between human capital and social capital, then, are argued to be firstly in education, where adults who are the product of extended education are more likely to volunteer to good causes and give their time to support community projects. Second, on the basis that illness can isolate people from communities, health education is considered to be a key element of human capital that allows them to be full contributors to society.

Reputational capital is a related concept that is of relevance to this study, particularly in terms of its interplay with social capital. Lin (2001) outlines the hypothesized relationship between individual exchanges and the development of reputation, which is indicated in Figure 2.1. He argues that the latter has four key dimensions: (1) the existence of unequal transactions of human and social capital (2) a persisting credit-debt relationship (3) the recognition of the relationship within by the debtor within his or her network and (4) the size of the network within which the debt is recognized. Of particular interest in the context of the present research is the recognition of social credit and social debt leading to – and by logical extension – reducing social capital.

Figure 2.1 – From social exchanges to capitalization



Adapted from Lin (2001: p153)

For the purpose of this study, which focuses on an individual's ability to influence others within their network, human capital is considered to be an important contributor to social capital in the sense that knowledge of a subject and an ability to communicate it concisely may be considered key elements to opinion-leadership (Katz and Lazarsfeld, 1955; Cha et al, 2007). The concept of RC is important because of the *recognition* of social credit / debit as the outcome of an unequal transaction which increases or depletes the store of social capital.

2.1.3 Trust and Reciprocity

Trust is considered by many to be a proxy of social capital (Putham, 1995; Keeley, 2007; World Bank, 2006). Others suggest that social capital and trust are inherently linked and that social capital is formed by the mutual expectation of behaviour based on the norm of co-operation (Paldham and Svendsen, 2000).

Trust can be defined as "the expectation that arises within a community of regular, honest and cooperative behaviour, based on commonly shared norms, on the part of other members of that community. Those norms can be about deep "value" questions like the nature of God or justice, but they also encompass secular norms like professional standards and codes of behaviour." (Fukuyama, 1995: p26). Trust can be perceived across three dimensions that lead to social order: behaviour of others must be perceived to be (1) predictable, (2) reliable and (3) must operate within a social reality in which the action exists are clearly understood by both

parties (Miztal, 1996). In other words, where members of the community understand their fellow members' behaviour and can be confident that it will be consistent and dependable, trust is inferred. In this way, it is concluded that the indication that members conform to the norms of a community can be considered to indicate the presence of trust. "If A does something for B and trusts B to reciprocate in the future, this establishes an expectation in A and an obligation on the part of B. This obligation can be conceived of as a credit slip held by A for performance by B." (Coleman, 1988:p. S103)."

It is the existence of reliable reciprocal action that underpins the social capital analogy and bridges the social and economic aspects of the theory. Trust is argued to reduce the need for external transactional regulation and, according to the Coase theorem, where transaction costs are low, collective action problems are easier to resolve than through regulation (Coase, 1990). Reduced transaction costs are argued to improve economic efficiency and stimulate growth (Whiteley, 1990).

2.2 Operationalising Social Capital

One of the common criticisms of social capital theory is that the wide-range of definitions cause problems with operationalisation and measurement (Adler, 2002, Portes and Landolt, 2000, Adam and Roncevic 2003).

Coleman's (1988) functional perspective of social capital contends that it is indicated by its effect, and is therefore not measurable, has been criticized for being "heuristic and not falsifiable" (Lin, 1990: p33). This has led to calls to develop meaningful objective studies, one of the most well recognized of which comprises fourteen measures that are regularly administered as part of the US General Social Survey (Putnam, 2001). However, different conclusions have been drawn from the same evidence: for example, a membership of societies remains steady and although time spent socialising with neighbours has reduced, time spent with friends has increased. On one hand, Putnham (2001) interprets this to indicate reduced social capital in America, although it is suggested that this may simply reflect increased mobility as a result of personal transportation (Paxton, 1999).

In attempting to monitor the development of social capital at an individual level, it is useful to distinguish between *causal variables* (such as network location, the ability to exploit embedded resources such as contacts, support or information), and *outcomes*, for example better jobs, promotion or elevated social status (Adam and Roncevic 2003).

Arguably, the existence of social capital has become easier to measure as social connections and interactions have become empirically testable using online network analysis techniques (Kozinets, 2006). Perception surveys can be an imperfect source due to the lack of incentive for respondents to answer honestly (Quibria, 2003), and the temptation to provide socially desirable responses (Fisher, 1993).

From a macro perspective, where interactions between individuals are extrapolated to measure sociological issues such as civic trust or the role of institutions on the fabric of society, the measurement of social capital is indeed tacit and complex. Perhaps as a reaction to this critique, Inkpen and Tsang (2005) have explicitly incorporated this issue into their definition by recognising that there is an individual and organisational component, although others have included this element in a more oblique fashion (Portes and Sensenbrenner, 1993, Putnam, 1995).

However, the aim of the present research project is to evaluate the extent to which social capital can help to explain the phenomenon of personal influence and opinion-leadership, therefore the problems of measurement and operationalisation at a macro level are of less pertinence. At a micro-level (that is peer-to-peer); the extent to which one individual can influence another relies on both horizontal and vertical communications within a network. This is the case even when the channel results in many perceiving the same message simultaneously. At this level, not only is social capital less problematic to operationalise and measure, but there is also more definitional commonality.

Table 2.1: Definitions of social capital

Authors	Definitions of social capital	Perspective
(Bourdieu, 1986) (p248)	"The aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalised relationships of mutual acquaintance and recognition or in other words, to membership in a group which provides each of its members with the backing of the collectivity-owned capital, a "credential" which entitles them to credit, in the various senses of the word".	Networks relationships Reciprocity
(Bourdieu, 1986) (p243)	"…made up of social obligations ('connections') which is convertible, in certain conditions, into economic capital and may be institutionalized in the form of a title of nobility".	Network relationships Personal benefits
(Coleman, 1988) (S98)	"Social capital is defined by its function. It is not a single entity, but a variety of different entities having two characteristics in common: they all consist of some aspect of social structures, and they facilitate certain actions of actors whether persons or corporate actors within the structure."	Network relationships Behavioural norms
(Burt, 1992) (p9)	"…friends, colleagues, and more general contacts through whom you receive opportunities to use your financial and human capital".	Network relationships Personal benefits
(Portes and Sensenbrenner, 1993)(p1323)	"…those expectations for action within a collectivity that affect the economic goals and goal-seeking behavior of its members, even if these expectations are not oriented toward the economic sphere."	Network relationships Reciprocity
Putnam, 1995: 167	"social capital here refers to the feature of social organisation, such as trust, norms and networks that can improve the efficiency of society by facilitating co-ordinated actions"	Network relationships Reciprocity
(Putnam, 1995) (p66)	"…features of social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit."	Network relationships Reciprocity

Authors	Definitions of social capital	Perspective
(Fukuyama, 1995) (p10)	"…the ability of people to work together for common purposes in groups and organizations". Quoted by (Adler, 2002)	Network relationships Reciprocity
(Fukuyama, 1995) (p26)	"social capital is a capability that arises from the prevalence of trust in a society or in certain parts of it"	Network Relationships Personal benefits
(Inglehart, 1997) (p188)	"a culture of trust and tolerance, in which extensive networks of voluntary associations emerge"	Network relationships Reciprocity
(Nahapiet and Ghoshal, 1998) (p243)	"sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit…comprises both the network and the assets that may be mobilized"	Network relationships Reciprocity
(Baker, 2000) (p619)	"a resource that actors derive from specific social structures and then use to pursue their interests; it is created by changes in the relationship among actors"	Network Relationships Personal benefits
(Belliveau et al., 1996) (p1571-2)	"First, social capital can be viewed as based on social similarity, the shared affiliations or activities that indicate "how" one knows someone…Second, social capital can be viewed as an individual's personal network and elite institutional affiliations."	Network relationships Reciprocity
(Portes, 1998) (p6)	"The ability of actors to secure benefits by virtue of membership in social networks or other social structure"	Network Relationships Personal benefits
(Portes, 1998) (p79)	"…the ability to secure benefits through membership in networks and other social structures". Quoted in (Hawe and Shiell, 2000)	Network Relationships Personal benefits
(Burt, 2005) (p4).	"The advantage created by a person's location in a structure of relationships" Quoted by (Adler, 2002).	Network relationships Personal benefits
(Woolcock, 2001) (p67)	"…one's family, friends and associates constitute an important asset, one that can be called upon in a crisis, enjoyed for its own sake and/or leveraged for material gain."	Network relationships Personal benefits

Authors	Definitions of social capital	Perspective
(Woolcock and Narayan, 2000) (p3)	"Social capital refers to the norms and networks that enable people to act collectively." – in draft – find final printed version	Network relationships Reciprocity
(Brehm and Rahn, 1997) (p999)	"the web of cooperative relationships between citizens that facilitate resolution of collection action problem"	Network relationships Reciprocity
(Putnam, 2000: p19)	"…to connections among individuals – social networks and the norms of reciprocity and trustworthiness that arise from them."	Network relationships Reciprocity
(Schuller et al., 2000)(p1)	"…broadly, social networks, the reciprocities that arise from them and the value of these for achieving mutual goals…"	Network relationships Reciprocity
(Glaeser et al., 2000) (F438)	"a person's social characteristics including social skills, charisma and the size of the Rolodex which enables him to reap market and non-market returns from interactions with others.	Network Relationships Personal benefits
(Portes and Landolt, 2000) (p145)	"…the ability to secure resources by virtue of membership in social networks or larger social structures represents the most widely accepted definition of the term today".	Network relationships Reciprocity
(Bowles and Gintis, 2002) (p2)	"…trust, concern for one's associates, a willingness to live by the norms of one's community and to punish those who do not.	Network Relationships Reciprocity
(Sobel, 2002) (p139)	"…describes circumstances in which individuals can use membership in groups and networks to secure benefits."	Network Relationships Personal benefits
(Lin, 2002) (p 21).	"...a structural explanation for least-effort interactions; interactions tend to promote sentiment and shared resources and vice versa. It is expected, then, that the homophilous interaction is the preferred and more frequent type of interaction…the expected pervasive pattern of interactions observed".	Network relationships Reciprocity
(Adler, 2002) (p145)	"Social capital is the goodwill available to individuals or groups. Its source lies in the structure and content of the actor's social relations. Its effects flow from the information, influence, and solidarity it makes available to the actor".	Network relationships Reciprocity

Authors	Definitions of social capital	Perspective
(Inkpen and Tsang, 2005) (p151)	"the aggregate of resources embedded within, available through, and derived from the network of relationships possessed by an individual or organization—a definition that accommodates both the private and public good perspectives of social capital."	Network relationships Reciprocity

The striking commonality among all the above definitions is the reference to an appropriable network of relationships. While the role of norms in developing and policing a network community is explicit in only two (Bowles and Gintis, 2002, Coleman, 1988), in many of the others, norms can be inferred through reference to the way behaviours are guided or discouraged within the community.

There are two groups of definition, those that refer to personal gain and those that refer to reciprocity. Superficially, these would appear to be opposing definitions, but their focus is simply in different areas; the accumulation of social capital relies on a disposition to pro-social behaviour (Dasgupta, 2005). Even where the network is perceived as a "resource" (Baker, 2000), an "advantage" (Burt, 2005) or an "asset" (Woolcock, 2001), if there is a perception that there is a cost to generate or 'cash in' these benefits, then reciprocation by way of returned services or favours is implicit. This is consistent with Gouldner's (1960) definition of reciprocity which assumes a favour is received before given.

While on one hand there is a philosophical disparity between the reciprocal exchange of services as a cost or as a core element of membership of the community itself, the development of trust in two of Misztal's (1996) dimensions is not affected; behaviour is predictable and reliable in either case.

Another key criticism of social capital is the potential confusion between sources and consequences: "…there is a common tendency to confuse the *ability* to secure resources through networks with the resources themselves. This can easily lead to tautological statements…" (Portes and Landolt, 2000: p522). In proposing a solution to this controversy, Foley and Edwards (1999) propose that where participation in a network leads to co-operation, this should be considered the source,

leading to the consequences of social capital. Arguably, this problem is mitigated by the conceptualisation of social capital across two dimensions: (1) identification of an individual to be part of a community or group and (2) evidence of behaviour that is perceived to be a predictable and reliable indicator that valuable 'services' (for example, favours or information) are potentially appropriable by other members in the network.

Therefore, the conclusion from the meta-review of social capital definitions is that there are two dimensions of social capital, which can be broadly categorised into *accumulation* (network relationships and sources) and *fungibility* (personal benefits or reciprocity). These are explored in the following two sub-sections.

2.2.1 Dimension 1: Network Relationships and Sources of social capital

If it is accepted that access to a network is a pre-requisite to the existence of social capital both in the way it can be accumulated and stored, then the nature of networks requires further consideration.

Members of social networks can interact with any members of their own circles and can generate social capital through purposive or instrumental action. The relationships an individual holds with the members of his network can be categorised by the strength of the interpersonal tie: "…the strength of a ties is a (probably linear) combination of the amount of time, the emotional intensity, the intimacy (mutual confiding), and the reciprocal services which categorise the tie" (Granovetter, 1973: p1361). Granvetter did not specifically argue that individuals consciously exploit weak ties or bridges for these advantages but it is implicit that their use requires additional effort and should therefore be classed as purposive (Lin, 2002).

Within networks exist the phenomenon of 'structural holes', which can be bridged by mutually beneficial interaction between individuals in each side (Burt, 2000a). Burt is more explicit than Gravovetter about the explicit nature of the effort and "active manipulation" to maintain and exploit such relationships (Lin, 2002). Burt (2001) considers social capital in terms of network constraint, which he measures in terms of size, density and hierarchy, arguing that fewer structural holes result in reduced social capital. Woolcock and Naranyan (2000) agree: "…there must be two

basic dimensions of social capital at the community level, namely 'strong' intra-community ties ("bonds") and 'weak' extra-community networks ("bridges"): both are needed to avoid making tautological claims regarding the efficacy of social capital." (p8).

Relational social capital is defined as that which pertains to the perceptions and attitudes held between the members of the exchange. Cognitive social capital refers to that which is available through the way the communication engages with their thought processes. These sources are particularly available within closely bounded networks where members are treated differently to non-members (Nahapiet and Ghoshal, 1998). This may be considered to be supplementary to Burt's brokerage theory (2005), which suggests that those individuals who stand at intersections between various networks (brokers) can access a wide range of resources around them and is further evidence that a comprehensive perspective of social capital must conceptually include both closed networks and structural holes both in terms of sources and potential for expenditure.

Social capital is embedded in social relations (Lin, 1999) and can be accrued from the elements that are closed, with close ties to family and friends, as well as in the structural holes that link groups from different parts of the individual's life (Podolny and Baron, 1997, Gargiulo and Benassi, 2000). As Portes (1998) argues: "The network approach is micro-oriented. Its focus is on individuals, that is, on their ability to secure benefits by virtue of membership and position in a social nexus" (p6).

The final important question relates to the individual's position within the network and the access this provides to appropriable resources. There are four key considerations: the strength of the ego's structural position; the strength of the tie; the strength of the location of the tie; and, the joint (interaction) effect of the position, the tie and the location (Lin, 1999, Lin, 2002).

The conclusion, then, is that the need to act in order to create and mobilise resources within a network is paramount both for the accumulation and expenditure of social

capital within the embedded social relationships that make up the network, giving the opportunity to gain information and exert influence on others.

The second part of this dimension of social capital is the problem of the nature and forms it takes. Woolcock (1998) proposes three distinct types of social capital: 'bonding' refers to close relationships such as family, close friends and neighbours; 'bridging' encompasses acquaintances and workmates and 'linking' establishes relationships outside an individual's immediate network. Reflective of the work of Granovetter (1973) and Burt (1995), Woolcock believes that linking social capital allows individuals to exploit a much wider range of resources than those they would otherwise have access to. In a study of workplace relationships, Estlund (2003) underlined the essential role of bridging relationships arguing that they encourage compromise and cooperation, cultivating "feelings of connectedness and empathy across rather than within lines of social division" (p108).

If social capital is to be meaningfully operationalized, its sources must be recognizable and actors must have the ability to manipulate them (Nahapiet and Ghoshal, 1998). Various scholars have proposed a range of sources. Adler (2002) proposes three: first, social relations refers to the appropriable ties that can be used for personal gain and, itself, is subject to three conditions, which are; the extent to which a members of a dyad have the opportunity, motivation and ability to help the other party. Second, market relations, which shape the nature of the society in which we live and can have both a positive or negative effect on social capital. Third, hierarchical relations refers to the structure of the networks and social relations in which individuals operate, where proximity and access to powerful or influential people provides benefits.

Nahapiet and Ghoshal (1998) have been influential in their contribution to the dimensions of social capital: *Structural* social capital refers to the individual's network; this refers to "properties of the social system and of the network of relations as a whole" (p244) ; *Relational* social capital refers to the people in an individual's network and the personal perceptions that are developed over a series of interactions such as approval and prestige; *Cognitive* social capital refers to the codes and narratives shared in communications between people in a given network. It is

this categorization of the sources of social capital that underpins the empirical elements of the present research.

2.2.2 Dimension 2: Social Capital as a Fungible Resource

Social capital can be accumulated from exploitation of network relations, assuming such is "appropriable", in other words that the other party has the motivation, opportunity and ability to deliver benefits (Nahapiet and Ghoshal, 1998; Adler, 2002). Further, the concept of reciprocity is seen to be a core concept in social capital. This implies that social capital is fungible, in other words that it can be exchanged for commodities of a similar value, and in this way is convertible into financial advantage, for example through access to promotion or job opportunities. Equally, other types of advantage are available through the exchange of social capital; if we consider influence as a conversion mechanism, individuals can help to create the kind of world they want to live in (Burt, 1999; Keller and Berry, 2003).

In common with financial capital, there are risks to storing social capital and costs associated with its security. It exists in the relationship between the reciprocating parties rather than with an individual and if the relationship between the dyad breaks down, "the connection dissolves with whatever social capital it contained" (Burt, 1992: p58). Therefore, in the same way management of financial capital accrues brokerage costs, the maintenance of social capital requires the investment of time and effort by both parties.

A key factor in an individual's ability to exploit social capital is the nature of the contact, which can be considered as having two types: 'expressive', which is the communications which reflect the feelings, perception or status of an individual and 'instrumental', where a particular outcome is desired and the communication is designed to achieve such.

However, to fully understand the fungibility of social capital, consideration must be given to its pedigree as an economic theory, and the criticism that it is no more than an extension of a poor analogy (Solow, 1999). The foundations of the different forms of capital come from the 18th Century Scottish Economist, Adam Smith, who differentiated between the use of labour in production and the skills and capabilities

they possess (Smith, 1991). The World Bank identifies both human capital and social capital as key elements underpinning intangible capital residual which complement natural and financial resources to form the national wealth (World Bank Report, 2006).

On one hand, some prominent economists have rejected the concept that social relations should be likened to capital. It is argued social capital does not conform to the definition, which stands for a stock of produced or natural factors of production that can be expected to yield productive services for some time, and that the term should be abandoned (Solow, 1999; Arrow, 1999). Fine (2003) summarises this view: "it ain't social and it ain't capital" (p597).

On the other hand, others accept that the term is too entrenched to be abandoned and suggest that greater clarity in the definition of capital will resolve the conflict: social capital "has many important capital-like properties including transformation capacity, durability, flexibility, substitutability, opportunities for decay (maintenance), reliability, ability to create other capital forms, and investment (disinvestment) opportunities." (Robison et al, 2002 p1).

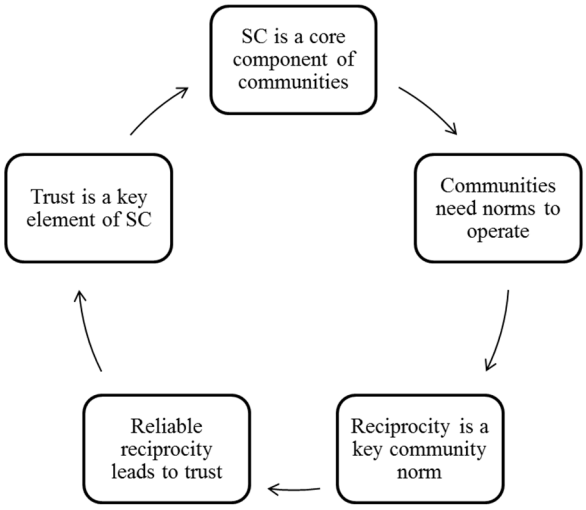
It is suggested that trust and credibility bridge the social and economic elements of social capital (Dasgupta, 2005; Whiteley, 1990). In developing this argument, key elements are pertinent: first, mutual affection exists within social relationships. Second, that these lead to a disposition towards pro-social behaviour, in other words that promises are credible when there is prior knowledge of their trustworthiness. Third, incentives are required to ensure promises are kept, which supports the concept that equilibrium is in the interest of both parties in an exchange. Fourth, that social and community norms act as external enforcement, suggesting that social capital performs an economic role otherwise required of regulation or other types of more expensive and less efficient intervention. Fifth, that reputation is an important ancillary capital asset supporting the concept. Finally, that the long-term enforcement of rules and sanctions are fulfilled by long-term social relationships (Dasgupta, 2005)

The long-term nature of relationships in relation with fungibility is important; in studies on perception of fungibility in repeated play decisions, the characteristics of partners were found to be more important in bets that were repeated 100 times versus single play bets (DeKay and Kim, 2005). Although generally very critical about social capital overall, Fine (2003) indicates that its attractiveness as a theoretical explanation of a wide range of social phenomena is the idea that it is fungible. In fact, it is the conception that it is viewed as being a "fungible friend" and its application in such a wide range of contexts that underlines Fine's critique.

Some of the problems with conceptualising social capital as a financial theory are all due to its intangible nature in comparison with its counterparts; human capital can be measured by aptitude tests and financial capital is measured in terms of assets held (Bourdieu, 1986, Coleman, 1988). This leads to ontological challenges related to its sources, forms and consequences (Adam and Roncevic, 2003) and the challenges of the 'transformative' ability to capital: "If people trust each other, honour obligations, follow norms, and befriend others only to maximise their own utility, then these things are just additional commodities to be exchanged." (Robison et al, 2002: p5).

While there are a number of points of disagreement among social capital theorists in the social sciences, a range of common themes emerge in their work (Onyx and Bullen, 2000). These themes are explored in this section and summarized below.

Figure 2.2 – Key themes of social capital



Social capital is a core component of communities. While an individual in isolation can generate human capital (Becker, 1994), interaction with others is a pre-requisite to the formation or expenditure of social capital (Bourdieu, 1990). The formation and maintenance of networks of contacts is a primary theme that is common among many social capital theorists and enduring strong-ties and relationships that form the heart of the networks are critical (Portes, 1998, Coleman, 1988). However, social capital is also to be found in the structural holes, which exist between closely bonded network groups (Burt, 200b). In this way, the formation of new relationships through "spontaneous sociability" (Onyx and Bullen, 2000) (p24) is required. Network position is important; for example in work-related, hierarchical structures, proximity to influential senior staff can be the source of advantage. However, this is arguably less of a barrier in online social networks, where access to such individuals may be less formalised, the principle that communication must be vertical as well as horizontal is a common theme (Putnam et al., 1995, Lin, 1999).

Communities need norms to operate. Social norms are comprised of the values and shared expectations of behaviours, which are first considered to be external but later, become, internalized (Sherif, 1936). These can be *descriptive* or *injunctive* respectively, indicating the nature of the norm and how the individual ought to behave (Reno et al., 1993). Networks are guided by a range of formal and informal norms which guide the actions of their members and allow the group to police behaviours and ensure compliance (Lin, 1999, Coleman, 1988). For Putnam (1995), compliance to social norms is the foundation to the concept that social capital is at the heart of civic trust and democracy.

Reciprocity is a key community norm. Social capital can be considered to be an instantiated informal norm itself leading to cooperation and reciprocity (Fukuyama, 1995). A general definition of the norm of reciprocity suggests that, at a minimum, people should help and not injure those who help them, and assumes that the reciprocating party has received benefit first (Gouldner, 1960). Reciprocity, then, can be considered a foundation to social capital; an individual supplies a service or offers another a favour with the implicit mutual expectation, that it will be returned in equal measure (Onyx and Bullen, 2000). In an online context, such reciprocal

favours may be as simple as supporting another's argument or 'liking' a friends' photographs (Kumar et al., 2010).

Reliance on reciprocity leads to trust. Drawing on Bourdieu's (1986b) concept of the habitus, where individuals construct their own cognitive structures, Misztal (1996) argues that the three dimensions of trust equate to social order: predictability, reliability and legibility of social reality. Onyx and Bullen (2000) extend this argument: "Trust entails a willingness to take risks in a social context based on a sense of confidence that others will respond as expected and will act in mutually supportive ways, or at least that others do not intend harm." (Onyx and Bullen, 2000: p24). Civic trust is a cornerstone of the development of societal harmony and democracy (Putnam, 1995). It is acknowledged to be the result of regular conformity to commonly accepted behaviours ranging from core values such as religious or political beliefs through to standards or other behaviour codes (Fukuyama, 1995). Judgements of conformity to an individual's expectations can be made swiftly in an online context where members of communities can refer to the combination of self-presented personal information and history of behaviours recorded on a profile page or available through community generated recommendation systems (Ansari et al., 2000).

The starting point of this chapter was the assertion of two related propositions, the first of which has been established in Sections 2.1 and 2.2: a member of a community can establish relational, structural and cognitive resources (known as social capital) which can lead to a position of prominence (for example, opinion leadership).

The second proposition contains two elements, the first of which has been established so far in this chapter: that social capital is a fungible resource, meaning that it can be exchanged (Burt, 1992; Portes, 1995; Nahapiet and Ghoshal, 1998).

Sections 2.3 and 2.4 explore Personal Influence theory in order to support the second element, which is that, as well as exchanging social capital for favours, the 'owner' can spend it by exerting uninvited, purposive influence.

2.3 Personal Influence Theory

In their post war study of opinion leaders, Katz and Lazarsfeld (1955) first identified the important role played by individuals, who, because of their interest in a particular subject, social position and gregariousness were likely to affect the decisions made by members of their social networks.

Ronald Burt (1999) is the only prominent social capital theorist who has explicitly linked social capital and personal influence, using, as an example, the exchange of advice between Fortune 100 CEO's, where one responds to the other's request for a suggestion to solve a particular problem. Burt argues that the opinion-giver was asked his advice partly because of his position within the network, and that he enhanced his accrued social capital by offering a workable solution to his colleague's problem.

However, a question is raised here: had the opinion giver shared his advice without being asked, perhaps to further his own ends, would this exchange still be considered one where social capital was accrued or one where it was expended? A core principle of social capital is that it is a fungible resource, where 'favours' are repaid 'in kind'. It is argued in the following sections that one of the ways in which owners of social capital can make use of their asset is by using it to influence others. In order to justify this position, it is first necessary to explore the theoretical background of personal influence theory.

2.3.1 The Katz and Lazarsfeld School

Katz and Lazarsfeld (1955) identify four variables that facilitate the flow of communication. The first is *exposure*, which refers to access or attention, and in other words means the extent to which the receiver is likely to notice the message. The second variable is the *nature* of the message and the potential for it to be interpreted differently if the medium were to change. The third is the *form*, presentation or language in the message itself. Finally, the attitude and *disposition of the receiver* and the extent to which the message can be distorted by entrenched opinions or prejudices.

The development of group norms that underpin reciprocity and trust was central to Katz and Lazarsfeld's (1955) thesis. People form groups of inter-connected individuals in which opinions are shared and members actively influence each other's opinions, attitudes and actions. As a result, norms are collectively created which form the basis of the interaction within the group. Through conformity and policing of these norms, reliable and dependable behaviour is defined.

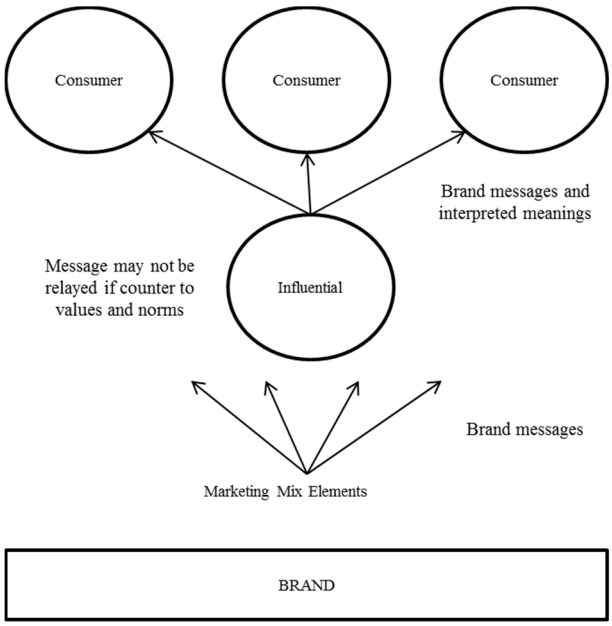
Katz and Lazarsfeld argue that members do not form these groups accidently, but "*actively seek each other out* as companions" (p59), attracted by being around like-minded people. However, this presents a potential conflict in their arguments: do people join groups because they share values or does value homophily develop as individuals conform to its norms? Katz and Lazarsfeld (1955) make three arguments to this point: first, as a result of the shared values, individuals value the benefits of conformity to group norms and desire adherence to group opinions, attitudes and behaviours. Second, members are motivated to maintain the identity of the group by creating boundaries and demanding habitual, uniform behaviour. Third, groups have goals which cannot be achieved without consensus.

2.3.2 Two-Step Communication Model

In their 'Two Step Communication Model', Katz and Lazarsfeld (1955) argue that messages from brands are intercepted by 'Influentials' who then control the course and nature of the messages as they flow to a wider audience: "from radio and print *to* opinion leaders and *from* them to less active sections of the population" (Katz and Lazarsfeld, 1955: p32).

The opinion-leader has the ability to determine how the message is circulated: if the message is considered contrary to the norms of the group, it may be negatively portrayed or not passed along. If, on the other hand, it is considered a positive contribution, it can be relayed in its raw form, or possibly reworded to be clearer to other members or even endorsed.

Figure 2.3 'Two-Step Communication Model'



"Two-Step Communication Model"
Adapted from Katz & Lazarsfeld, 1955

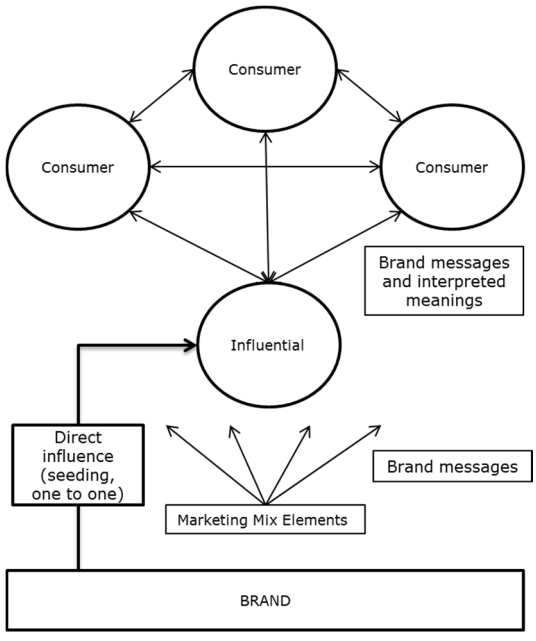
The model outlined in Fig 2.3 was developed as a result of a major study in the immediate post-war years, conducted in the mid-sized US city of Decatur, Illinois where 800 women were interviewed. The researchers enquired into four areas of everyday decisions: marketing, fashions, public affairs and movie-going. Their aim was to identify whether certain individuals carried more weight in the community. They found three important personal dimensions which suggested influence: life-stage, socio-economic status and gregariousness. They also noted that involvement in the subject matter was an important determinant of opinion-leadership as this tended to predict the extent to which people were exposed to media messages about a specific topic area. While the brand messages were available to all consumers to notice and interpret, the specific interest in the subject matter shown by the Influential was seen to be an important element in predicting whether they were likely to interpret and develop them to their own needs and those of the group (Weimann, 1994).

2.3.3 The Role of Opinion-Leaders in Word-of-Mouth Communications

The original two-step model has subsequently been extended to recognise peer-to-peer influence (Weimann, 1994), and is arguably a primary theoretical underpinning of the concept of word-of-mouth (WOM). In communications via the Internet, where there is a greater bi-directional opportunity to communicate with peers, the role of the opinion-leader has a potential greater influence, both in terms of breadth of audience, as well as the availability of explicit evidence that indicates the author's credibility and reputation (Dellarocas, 2003; Adomavicius and Tuzilin, 2005).

The two-step model has been further extended to incorporate more recent theory related to the ways in which consumer communities operate (Cova et al, 2010). The 'Network Co-Production Model' recognises that direct influence is sometimes exerted from the brand to the Influencer. Such influence may be in the form of special opportunities to view a product or where privileged information is provided to them for dissemination by this route (Kozinets et al, 2010).

Figure 2.4 – Co-Production Model



"Network Coproduction Model"
Adapted from Kozinets (2010)

The existence and effects of 'consumer networks' have been the subject of much research in relation to WOM (Brooks, 1957). A strong connection has been established with the adoption of innovations in a range of product categories (Whyte, 1954; Rogers, 1995; Arndt, 1967; Engel, 1969; Gray, 1973). Firm-created WOM refers to cases where organisations have attempted to create conversations that would not have otherwise existed. This technique has been found be particularly effective in cases where initial awareness is low among target consumers (Godes and Mayzlin, 2009). This helps to explain the relationship between WOM and diffusion of innovations. In a test of online opinion leadership, innovativeness was found to be a reliable indicator of opinion leadership (Tao et al, 2006).

2.3.4 Identifying Influencers

Particular personality traits and behaviour have been linked with indicators of personal influence. These are explored in the following paragraphs.

Gregariousness A range of studies has consistently noted the role of gregariousness as a predictor of opinion-leadership. Influentials have been found to be very active socially, interacting with many people in their professional lives as well as in any voluntary activities in which they participate. As well as attending many functions they tend to be active participants in discussions. Through these means, they become well-integrated into many social networks, enjoying the company of a wide range of friends and acquaintances (Weimann, 1994; McCleneghan, 1977; Booth and Babchuk, 1972). In tests comparing 'opinion-givers' to 'opinion-askers' and 'inactive' members of a community, the former were found to report higher levels of gregariousness in their relationships with friends and relatives as well as a more frequent membership of social groups and organisations. (Troldahl and Van Dam, 1965).

Knowledge Product involvement, particularly of an enduring nature, as evidenced by the content and nature of the communication from the opinion-leader, is important in effective influence (Richins and Root-Shaffer, 1988; Petty, Cacioppo and Goldman, 1981). Further, various personal characteristics, such as credibility and perceived knowledge, were found to be important in the effectiveness of the source of information as part of WOM (Gilly et al, 1998). In a number of studies, opinion-

leaders were found to exhibit different cognitive processing skills compared to others in the community: "they acquire more information from the media, process and retain more details and are able to use this information in their functioning as Influentials." (Weimann, 1994: p105). Influentials are considered to exhibit greater knowledge of certain subjects because they are more motivated. They are therefore exposed to a greater level of media communications than their peers. However, it was later suggested that they process information differently and are therefore more prone to interpret and retain information to a greater extent: "under either voluntary or forced exposure conditions, individuals reporting high opinion leadership acquire more information than people reporting either moderate or low opinion leadership" (Richmond, 1977). Exposure to a medium has not been found to be different between those designated as high vs. low opinion-leaders, although the nature of their viewing was more superficial, leading to a greater and more in-depth knowledge by those who exhibit opinion-leadership status. This was concluded to be due to their cognitive processing skills as opposed to non-leaders, who tended towards what was dubbed "surveillance-reassurance". (Levy, 1978).

Network Position The position an individual holds in a network is seen to have an effect on their capability to influence their neighbours (Katona, Zubcsek and Sarvary, 2011; Kratzer and Lettl, 2009). Opinion leaders are reliant on their relative position in a network in order to maintain the effectiveness of their influence and are normally considered to be 'central' in their networks. Those who are centrally located tend towards a dominance of strong ties whereas those who are located peripherally will tend to have more weak ties (Weimann, 1994). Significant correlation was noted between spheres of influence for specific opinion-leaders, for example products that were, at the time, considered an almost exclusively female domain: women's' fashion and cleansers and detergents. This led to the conclusion that opinion-leadership was generally domain-specific, either in a single category or in related products (Katz and Lazarsfeld, 1955). However, the statistical analyses that underpin this conclusion have subsequently been questioned, suggesting that even in the original US studies in the 1950, the existence of a general influencer was uncovered (Marcus and Bauer, 1964). These individuals have been referred to as 'Market Mavens' and are seen as being distinct from product-based experts and early

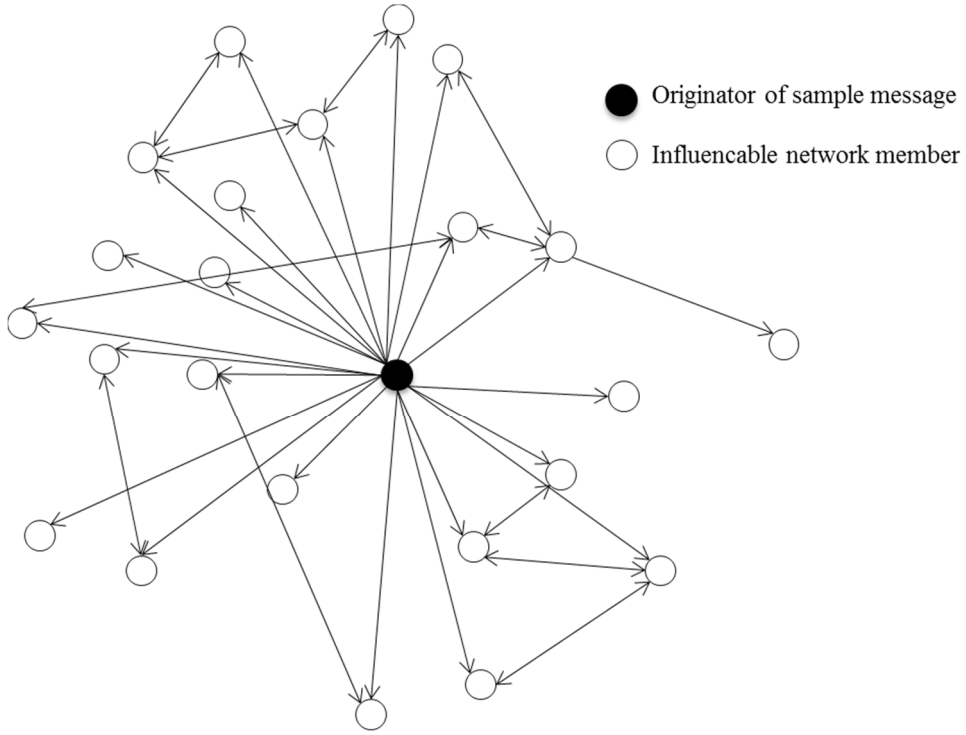
adopters, although they are argued to play a complementary role in shaping consumer decision making. (Feick and Price, 1987). It is argued that the Maven plays an important role in modern society by influencing matters ranging from fashion choices, to technology adoption to political opinions (Gladwell, 2000).

2.4 "The Accidental Influencers" Hypothesis

In his 'Small World' experiments, Stanley Milgram (1967) first discussed the idea that everyone in the world is connected with a limited number of steps in between. The idea that messages can pass through these connections is the basis of viral marketing, which can be considered a sub-category of WOM. The use of 'contagion' as a design principle has been adopted by inventors of computer systems and online communities (Kleinberg, 2008).

In simulations of cascades of message progression through an experimental community, the top 10% of influential members were not found to create a change in diffusion patterns, although they were the instigators of a greater number of cascades (Watts and Dodds, 2007). This was reported to be contrary to traditional Influentials theory (Katz and Lazarsfeld, 1955). Further, in homogenous networks, such as special-interest communities where members may share a number of interests and characteristics, Influentials showed no difference in cascade patterns compared to other members (Watts and Dodds, 2007). This was concluded to indicate that the critical factor was the community's susceptibility to influence rather than the instigators' capability to persuade (Watts, 2007). This led to the term 'accidental influencers' which, more correctly refers to the contagion-based effects of users exploiting a large network.

Figure 2.5 Accidental Influencers Model.



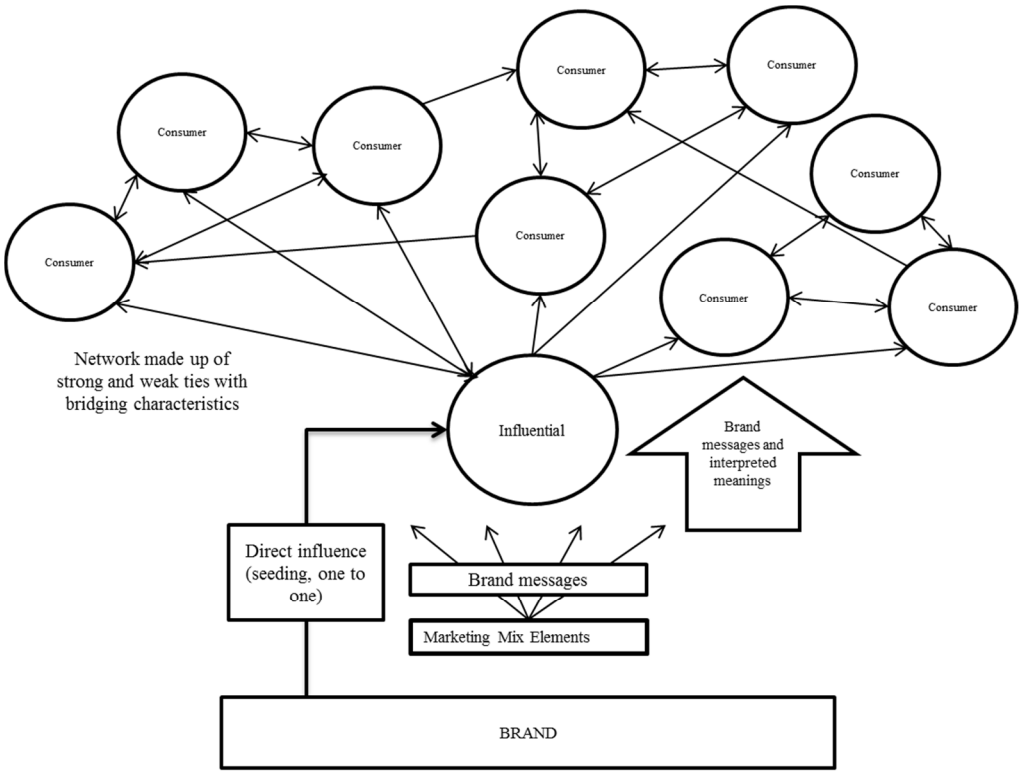
'Accidental Influencers' Model
Inferred from Watts and Dodds (2007)

However, contrary to the accidental influencers hypothesis, other evidence suggests that influence is gained through focused effort and use of specific communication techniques such as singularity of message topic (Cha et al, 2010). Spikes can be observed in the 'cascades' within social networks which indicate the direction of communication and these are hypothesised to be content-related (Lescovec, Singh and Kleinberg, 2006). Similar effects have been observed in brand-seeded messages by Bakshy et al (2011) meaning that exchange of information appears to play a role in influence and message progression. Therefore, rather than merely tapping into innate influencability among the audience, the message must be considered in some way to be more persuasive. This may suggest that the 'accidental influencers theory' does not fully explain diffusion.

While it is certain that the advent of the Internet and the development of tools and techniques to understand the diffusion of communications have affected personal influence theory, the direction in which these innovations will take the theory is

much less clear. Communications models must be brought up to date to recognise the multi-step peer-to-peer elements of modern communications platforms, which are suggested in Figure 3.4.

Figure 2.6 Multi-Step Communications Model



"Hypothesised model incorporating "

Incorporates Katz & Lazarsfeld (1955), Kozinets (2010) and Watts & Dodds (2007)

2.5 Persuasion

One explanation of the reason for one individual to be more influential than another is that their communication may be considered to be more persuasive than those of another. While Persuasion Theory is not a core theoretical component of the present study, it may help to understand some of the findings. In his synthesis of a range of definitions of persuasion, Perloff (2003) suggests that there are five components to persuasion: (1) it is a process which happens over time and relies on the symbolic meaning of words and images; (2) it involves a deliberate attempt to influence; (3) it involves the transmission of a message; (4) the persuader activates the desire for

change in the receiver of the message and, (5) it requires free-choice and in this way is distinguishable from coercion.

Further, there are argued to be three fundamental communicator characteristics: authority, credibility and social attractiveness. Authority figures tend to persuade through compliance where people adopt a particular behaviour, belief or attitude because they will receive rewards or avoid punishment. Credible communicators influence by internalisation, where persuasion attempts are accepted because they conform to pre-existing values or attitudes. Attractive communicators influence through more affective processes such as identification, where their ideas are accepted because people identify with them or wish to establish a positive relationship with the communicator (Perloff, 2003).

The key question around which to organise thinking about persuasion comes from Smith, Lasswell & Casey (1946): "Who says what to whom and with what effect?" Hovland, Janis and Kelley (1953) organised their persuasion and communication model around this question, categorising the key factors as: Independent Variables (source, message, recipient, and channel); Internal Mediating Processes (attention, comprehension, yielding, and retention) and Consequent Communication Effects (belief change, attitude change, behaviour change).

The Cognitive Response Approach to Persuasion (Brock, 1967; Greenwald, 1968; Perloff and Brock, 1980) suggested that there were three steps to persuasion: Communication leads to Cognitive Response, which may lead to Attitude Change.

While it was considered to advance understanding of persuasion at the time, this model did not recognise the ways in which the messages are processed (Perloff, 2003) and has been effectively replaced by dual models, which aim to resolve this limitation. The Heuristic-Systematic Model (HSM) (Chaiken, 1980) and the Elaboration Likelihood Model (ELM) (Petty & Cacioppo, 1986) have been widely accepted as the more comprehensive explanatory models.

As Chaiken et al (1999) acknowledges, the Central processing route in ELM encompasses her 'systematic' processing in HSM and the Peripheral ELM rout encompasses the HSM 'heuristic' processing. However, these are not synonymous

as they are represented in the ELM as "positions on a continuous dimension ranging from high to low elaboration likelihood rather than two mutually exclusive and exhaustive "types" of message processing". (Cacioppo and Petty, 2001: p673). It should be noted that any attitude change, which results from heuristic processing, might be "temporary or unstable" (Olson and Zanna, 1993).

The ELM refers to two types of cognitive processing: first, 'Central', where the reader focuses on the key elements of the communication; the sender, the message or the person and implies that he or she will think about the issues and implications of the message and it will therefore be subject to considerable cognitive elaboration. The second way is 'The Peripheral Route' which suggests that the message is processed around cues such as the communicator's physical appeal, writing style, associations between the message and other cues in the communication. This type of processing relies on heuristics, such as 'Experts are to be believed' or 'Dad's always right'.

The nature of the processing is decided by the receiver's ability and motivation. The key element to motivation is the receiver's level of involvement with the message subject: "Individuals are high in involvement when they perceive that an issue is personally relevant or bears directly on their own lives. They are low in involvement when they believe that an issue has little or no impact in their own lives." (Perloff, 2003: p130).

The ability of the receiver to process the message can relate to their personal ability (knowledge or evaluative skills) but may also relate to their circumstances at the time of processing the message (distractions or time available). The model has been criticised because certain variables can play more than one role: the attractiveness of the communicator may be a peripheral cue in some messages, but if the message were related to a beauty product, for example, the attractiveness of the communicator will be central to the message. Ambiguity in this area means that the model is difficult to falsify as it explains all outcomes. Petty and Wegener (1998) acknowledge this criticism and argue robustly that the multiple roles are as a result of the complexity of the model in comparison with its predecessors and propose that

future theories must "specify the conditions under which the different processes operate and any differential consequences from these processes." (p376).

In later tests of the ELM, Petty and Cacioppo (1983, 1986) identified another important factor: the role of involvement in the subject and the moderating role it had on persuasion and the enduring nature of any attitude change. They found that 'central route' processing was dominant in cases of high involvement and that under low-involvement, 'peripheral processing' prevailed and called for future research to investigate the antecedents to this finding (Petty and Cacioppo, 1983)

Expectations of the way receivers may process the message should have a bearing on the way a message is devised and which visual cues or prompts may accompany the message. While this thinking has been widely researched in relation to advertising effectiveness, little attention has been paid to it in the literature related to online content and VCs.

2.6 Social Capital and Personal Influence

Opinion leaders can be found across all demographic strata, they tend to be gregarious and also tend to exert their influence in a regular fashion in terms of both style and channel (Weimann, 1994). Importantly, though, they are considered to be experts by members of their networks (Weimann, 1994, Keller and Berry, 2003). It is the suggestion of the second proposition in this chapter that the development of opinion-leadership is a reflection of the social capital they have accumulated.

In his review of the early opinion-leader studies, Elihu Katz (1987) proposed three criteria that identify an opinion leader: (1) recognition within a community of the personification of certain values (2) knowledge or competence exhibited by the Influential, and (3) the opinion-leader's location within the network. In one of the most cited papers on social capital, three key sources of social capital have been identified: (1) Relational social capital refers to the interactions between members of a network (2) Cognitive social capital refers to the codes and narratives shared in communications between people in a given network, and (3) Structural social capital refers to the individual's network and their relative position within it. (Nahapiet and

Ghoshal, 1998). The similarity between these two separate categorizations is striking and supports the argument that the two are conceptually related.

Most authors on the subject of social capital focus on the aims of network members to make connections in order to generate social capital, and some recognise that instrumental action is required in order to expend the social capital in the form of returned favours (Resnick, 2001, Lin, 2002).

While not all theorists agree that social capital is a fungible resource (Portes and Landolt, 2000), the majority opinion suggests that it can be expended in a wide range of ways. For some, it is the very breadth of ways in which social capital can be exploited that underpins their criticism of it as a useful theory (Fine, 2003). However, the exertion of influence as an outcome of social capital is rarely referred to in explicit terms, but it is core to the proposition. The concept is linked to the development of community trust, the opportunity to exploit economic benefits or even the maintenance of civic involvement. Equally, a regularly acknowledged shadow-side of social capital is the potential negative influence of peer-pressure: "Most parents, for example, worry their teenage children will "fall in with the wrong crowd," that peer pressure and a strong desire for acceptance will induce them to take up harmful habits" (Woolcock, 2001: p68).

One member of a network seeking to influence another suggests evidence of instrumental and purposive action and as such represents an expenditure of social capital (Lin, 2002). For example, parents, grandparents, aunts and uncles invest much time and effort in building and maintaining relationships with their teenage relations in order that they can positively influence their choices, while possibly worrying that their teenagers' school-friends are doing the same. In another example, prominent bloggers and members of special-interest online community are seen to utilise their positions of network centrality, knowledge and communication skills to advance the cause of a favoured brand or strongly held opinion.

To suggest that close family members develop relationships with younger relatives simply in order to influence them would be far-fetched. However, the idea that

individuals may purposively develop a prominent community position specifically in order to prepare a platform for their personal agenda is perfectly credible.

The explicit links between social capital and influence theory have been previously explored: "Diffusion research describes how opinion leaders play their role of brokering information between groups and social capital research describes the benefits that accrue to brokers" (Burt, 1999: p37). The case used to reach this conclusion was of a personal exchange between the prominent CEO of GE Corporation, Jack Welsh who recommended a process of executive evaluation to Bernie Marcus, his golf-partner and the then CEO of Home Depot. Burt's contention was that Welsh had accrued a significant holding of social capital through his personal knowledge, position and relationships and that this allowed him to influence the direction of executive selection in a company in which he held no direct role or even any visible influence.

It is not intended to question Burt's conclusion that Welsh *generated* social capital in the exchange as reported because his advice was specifically sought and sharing his insight and creating influence added to his accrued social capital. Paraphrasing Lin's (2001) terminology in relation to reputational capital, Welsh engaged in a social exchange from which he received a social credit.

However, consider the fictitious case of Jane, an ordinary member of an online community. Over a period of time, she conforms to community norms, demonstrates significant domain-specific knowledge and is consistently friendly and constructive in her comments to other members. She builds a strong reputation, makes many online friends and, through this, becomes a prominent member of the community. During this time, Jane's friend develops a new product and asks Jane to recommend it to everyone she knows. Jane agrees and enthusiastically utilizes her online network to help promote her friend's product, using every opportunity she can to mention in both subtle and explicit ways. Undoubtedly, Jane is generating social capital with her 'real-world' friend who developed the product, but with her online friends in the community, by exploiting her network position, is the effect on her accrued social capital neutral, positive or negative? In other words, is she spending or generating social capital through her uninvited, purposive recommendations,

which, while they may create value for some, are undoubtedly motivated with purposive intent and may dissipate her position in the community.

Returning to Burt's (1999) example of Jack Welsh, had his recommendation been uninvited and with personal benefit in mind, Marcus may still have followed the advice, but would it still have generated social capital for Welsh or had he expended some of his accrual or would it have been considered the expenditure of a 'social debit'?

According to Brooks (1957), "an important distinction should be made between "influences" and "requests"" (p158). The somewhat culturally outdated example used by Brooks illustrates the difference between a husband, as the decision maker, requesting a different brand of coffee from his wife's weekly shop and of influencing *her* decision to change brand.

It is argued here that the same applies to information that is requested as opposed to that which is unsolicited. Returning to Burt's example, Marcus requested advice from Welsh, but if the latter had made a deliberate attempt to influence him on how to select his successor for his own purposes, then this could be considered to be a deliberate use of his social capital. Taking on the economic aspect of social capital as a fungible resource, then the influencer's social capital is depleted when used in this circumstance.

The two propositions that are outlined at the start of this chapter are underpinned by three theoretical statements. The first is that the sources of social capital as outlined by Nahapiet and Ghoshal (1998) are almost indistinguishable from the elements that support the concept of opinion leadership (Katz, 1987). A second is that a core component of social capital theory is that it is fungible and can be expended in many forms (Dasgupta, 1995; Fine, 2000). Third, that, dependent on circumstances, while an influencer may be able to generate social capital by providing useful advice to friends, it is also one of the ways in which social capital can be expended (Coleman, 1988; Burt, 1999).

The sources of social capital are considered to be a potential proxy for opinion-leadership, although the present study has no ambition to measure these per-se. It is

beyond the reasonable possibilities of a study of this nature to fully capture social capital. However, an indication that an increase in certain sources of social capital lead to influence, would be sufficiently encouraging to warrant planning and executing future studies which can build on these tentative first steps.

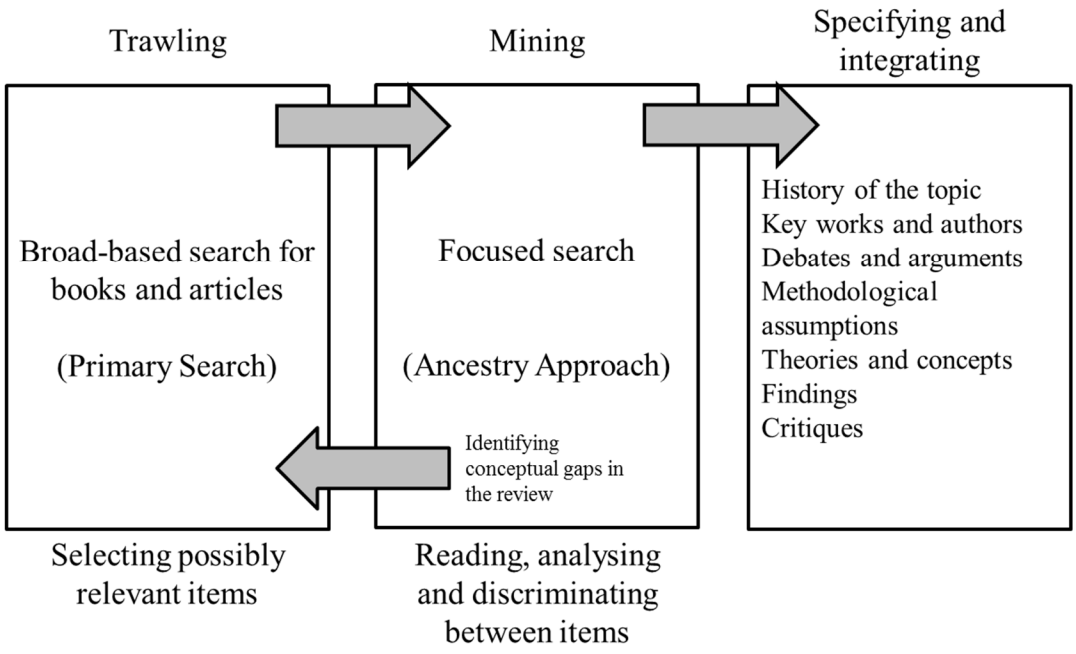
3 Conceptual Development

The previous chapter argued for two key propositions related to the accrual and exploitation of social capital and the extent to which it can be expended by influencing other members of the network. Those who hold positions of influence have the potential to change the nature and speed of diffusion of messages within a community – particularly online communities. Word-of-mouth (WOM) refers to the process whereby information about products or services is passed from one person to another (Day, 1971). Electronic word-of-mouth refers to the diffusion of information between individuals using digital channels and is specifically of relevance in the present research within Virtual Communities.

A literature review is defined as "The selection of available documents…on the topic, which contain information, ideas, data and evidence written from a particular standpoint to fulfil certain aims or express certain views on the nature of the topic and how it is to be investigated, and its effective evaluation of these documents in relation to the research being proposed." (Hart, 1998). Specifically in relation to the present research, the aim of the literature review is to provide context both in terms of the communication medium and the practical importance of the subject.

The process for searching and collating the available literature has broadly followed the process recommended by Hart (1998) which is summarised overleaf.

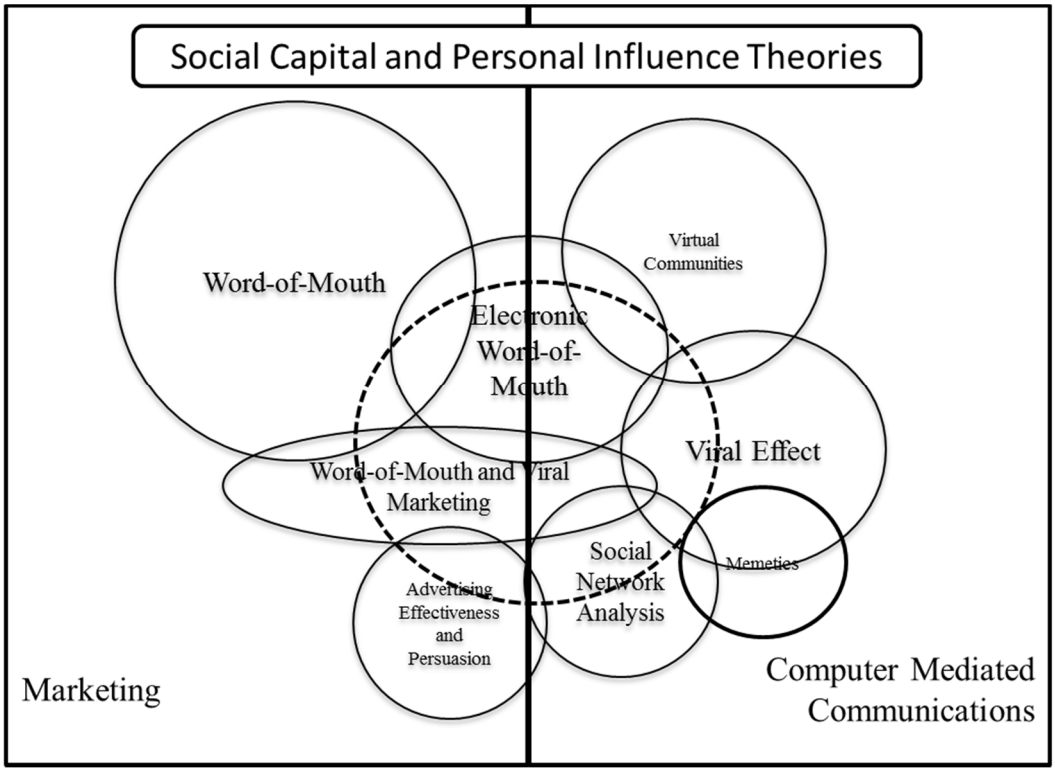
Figure 3.1 – Trawling and Mining for Information



Adapted from Hart (2001) including recommended approaches from Cooper (1989)

The present research crosses over a number of conceptual areas and therefore no particular study has gained dominance. This means that the evidence presented is classified as review-generated evidence (Cooper, 1989). The contextual elements of the literature that are relevant to the present study are described, analysed and evaluated in Sections 3.1 – 3.3 and summarised in Section 3.4 which indicates the gap in the literature and underpins the present research. This chapter builds upon the theoretical framework which is outlined in Chapter 2 and supports the development of the hypotheses development in Chapter 4.

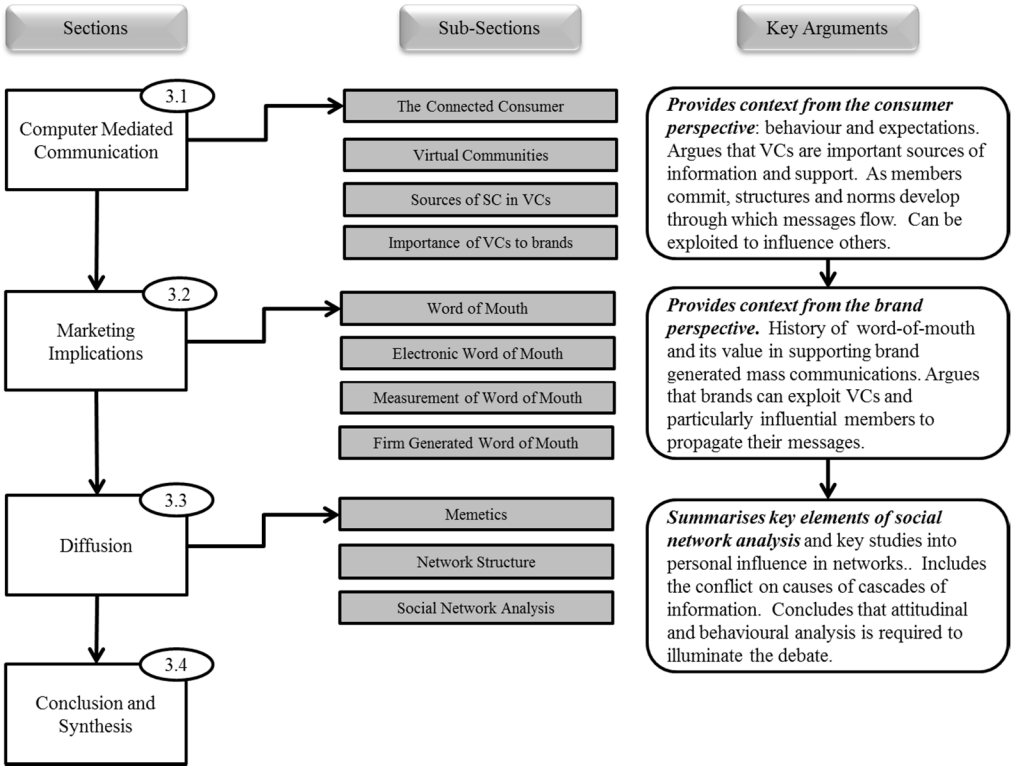
Figure 3.2 – Contextual Foundation



The chapter has been organised with the intention of providing a structured and logical review of the relevant contextual literature. Table 3.2 provides an overview of the chapter and indicates the extent to which the subjects overlap. The specific area of study is outlined in red and outlines the area where the present research makes a contribution to the body of knowledge.

While WOM and e-WOM have been researched over a number of years, the perspective of investigating antecedents and causes of influence within VCs represents an important theoretical contribution.

Figure 3.3 – Overview of Chapter



3.1 Computer Mediated Communications

3.1.1 The 'Connected Consumer'

In recent years, consumer behaviour literature has changed focus from treating consumers as processors of information provided by brands to one where the emphasis is on the connected nature of individuals (Belk, 1995). In this perspective, the focus is on the "subjective, emotional dimensions of consumption" (Catterall and Maclaran, 2001: p228).

The many-to-many communication that is a feature of the Internet has dramatically changed marketing practice, where brands need to recognise that "the consumer is an active participant in an interactive exercise of multiple feedback loops and highly immediate communication" (Hoffman and Novak, 1997: p66). The consumer now has the ability to create and promote content and to reach a wide audience using the medium (De Valck et al, 2009).

'Social Customers' are understood to behave differently to traditional consumers; they are highly connected and expect information on demand. They share information and socialise with peers and brands, which they require to be transparent and authentic. They are prepared to reward this with public statements of support. "Their loyalty is attitudinal not just behavioural. If things go well, they become advocates. The core driver of this relationship is trust." (Greenberg, 2009: p411).

Such behaviour has been linked with the life stage of the consumer (Tapscott et al, 2000; Palfrey and Gasser, 2008). Reflecting early Internet studies, it has been argued that electronic word-of-mouth (eWOM) is particularly effective among youth markets (Nie, 2001; Trunk, 2007). This idea has gained populist interest, particularly the suggestion that 'Digital Natives' - those born into the digital era - behave differently and have alternative expectations to those born earlier. These users expect systems with: high processing speed; random access to information rather than a step-by-step flow; parallel-processing; graphics first, text later and remaining connected at all times (Prensky, 2001).

However, recent internet studies suggest that the 'age' dimension of the 'digital-divide' is either a fallacy or no longer exists; while internet usage generally reduces

through the age groups, for certain activities (such as product purchasing or rating, information search), the percentage of users engaged is remarkably similar (Dutton, Helsper and Gerber, 2009). A marked increase recently in the membership and use of social networking sites (SNS) among users over the age of 35, means that this group forms over half of the total number of SNS users, resulting in the average age of adult SNS users being 38 (Pew Research Centre, 2010). It is a mistake, then, for firms to assume that the 'connected consumer' is disproportionately represented by 'youth' markets.

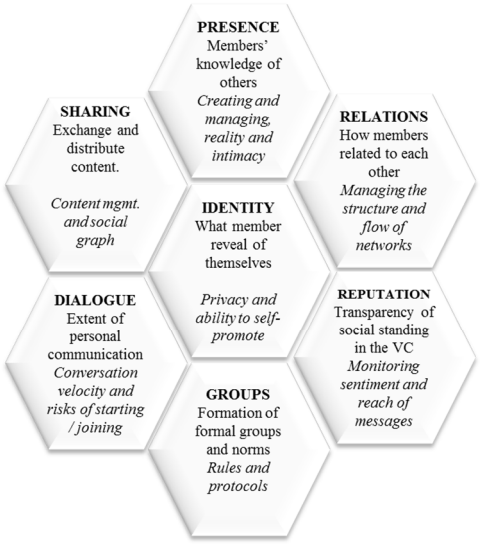
Other demographic and personal dimensions of users have received researchers' attention in recent years. The conclusion in the early 2000's was that affluence and career involvement were critical factors in predicting internet behaviour (Palumbo and Herbig, 1998; Kimiloglu, 2004). However, more recent studies suggest that every demographic segment is widely represented among Internet users and that usage patterns are trending towards homogeneity (Dutton, Helsper and Gerber, 2009).

The role played by computers is regarded by some to be more than that of a simple communication medium. It is argued that they are more entrenched in the social interaction although others have found that the way users perceive Internet content is affected by the credibility of the website on which the information is held (Brown, Broderick and Lee, 2007). Brands can exploit this phenomenon by designing websites that appeal to the need for 'socialness' by including social cues in the development of linguistic content (Wang et al, 2008). This gives the website "life-like attributes associated with personality or emotion…such as friendliness, politeness and helpfulness" (Wakefield, 2007: p119). In contrast, however, other evidence suggests that in a predominantly peer-to-peer environment, the credibility of the human source rather than the content medium was paramount (Kozinets et al, 2010).

This may be one reason why firms are struggling to find formal disciplines to help them manage communications through social media (Barwise and Meehan, 2010; Berthon, Pitt, McCarthy and Kates, 2007; Kaplan and Haenlein, 2010). This has led some theorists to propose a framework to categorise the key elements of social

media that connects the phenomena noted in VCs with the implications for firms wishing to maximise the value of social media to their brand (Keitzmann et al, 2011).

Figure 3.4 – Honeycomb Framework Social Media Building Blocks



Adapted from Kietzmann et al, 2011.

3.1.2 Virtual Communities

The traditional view of the community has been contingent upon geographical proximity (Wellman and Giulia, 1999). However, in the context of Computer Mediated Communication (CMC) the term 'virtual' allows a person to communicate and interact with others in a global context, often with no physical contact (Handy, 1995; Hiltz & Wellman, 1997). Such communities are often formed around shared interests (Figallo, 1998; Kilsheimer, 1997). As a result of the ability of VCs to influence people's perception of products and services, they are seen as important tools which can be exploited by marketers for commercial gain (Pitta and Fowler, 2005; Porter, 2004).

The following definition of a VC has been widely adopted: "Virtual communities are social aggregations that emerge from the Net when enough people carry on those public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace." (Rheingold, 2000: p5). In this sense VCs form

support networks where information is exchanged, and friendships are formed between strangers (Wellman, 1999). It is striking how similar Rheingold's definition is to the one provided by Mark Granovetter more than a quarter of a century earlier for the 'strength' of an interpersonal tie: "...the strength of a tie is a…combination of the amount of time, the emotional intensity, the intimacy...and the reciprocal services which characterise the tie." (Granovetter, 1973: p1361).

However, Rheingold's definition has been criticised for not including two important elements: regularity of contact between members and frequency of visits (Bagozzi and Dholakia, 2002). The inclusion of these elements clarifies the boundaries of the term and excludes certain websites, for example singles dating sites (Jones, 1997; Riding and Geffen, 2004).

Both are important elements of the present study and, as such, it is proposed to adopt Rheingold's (2000) definition with the addition of the temporal dimensions proposed by Bagozzi and Dholakia (2002).

The term VC has been used as an umbrella term to incorporate a range of services that allow users to create and share their own content, comment or rate others' content, as well as to engage in discussion. Examples include social network sites (SNS); blogs and micro-blogging sites; news aggregators and special interest.

Many consider that VC's are regarded as being fully computer mediated communication (Lee et al, 2003). However, others accept that face-to-face contact supplements online communication and that this varies between communities (Virnoche and Marx, 1997). Those communities which are characterised by a mixture of online and offline interaction have been described as 'fluid' (Wilson and Peterson, 2002). One example of this is LinkedIn®, where 'virtual' friends are often made with the specific intent of meeting in person in order to further business or career interests.

There are four types of community, each of which fulfils a particular consumer need: first, *communities of transaction* facilitate the purchasing process and provide information for making decisions. Second, *communities of interest* allow users to share information on a subject of mutual relevance; these involve a much greater

level of inter-personal communication than transaction communities and are largely based around peer-to-peer rather than centralised one-to-many forms of communication. Third, *communities of fantasy* allow users to create new identities, personas and histories for game-playing. Finally, *communities of relationship* allow members to share experiences, perhaps about personal matters such as health or relationships and are likely to involve discussion of a highly personal and emotionally involved nature. (Armstrong and Hagel III, 1996).

In her proposed typology of Virtual Communities, Constance Porter (2004) proposes five attributes which allow researchers to categorise VCs: (1) 'Purpose' refers to the nature of discourse and focus; (2) 'Place' identifies the extent to which the VC is fully online or a hybrid; (3) 'Platform' indicates the technical design of the community which dictates user experience; (4) 'Population' refers to the nature of the groups and what type of interaction or social ties are likely to be formed and; (5) 'Profit model' indicates whether a community is likely to create economic value or is purely for the benefit of the community. Ultimately though, usefulness is considered the primary factor in judging the relevance of a VC and the search for information is seen as a primary element of this judgement (Porter, 2004).

The dimensions of usefulness are summarised by Arguello et al (2006): "People come to online communities seeking information, encouragement, and conversation. When a community responds, participants benefit and become more committed" (p959).

3.1.3 Sources of Social Capital in Virtual Communities

The three elements outlined in the dimensions outlined by Arguello et al (2006) are considered to be primary motivators to initially join and to sustain involvement in VCs and are similar in nature to the sources of social capital as outlined by Nahapiet and Ghoshal (1998).

Cognitive – Information Exchange There are two perspectives to information exchange: that of the receiver and that of the sender of the message. For the former, the readiness of members to share knowledge is an important motivating force to join VCs (Facer and Furlong, 1989; Jones, 1995; Wellman et al., 1996). The fact

that much of the content in these communities is understood to be user-generated rather than provided by a firm is seen as an important element in its perceived credibility (Furlong, 2006).

In a wide-scale study of internet behaviour in the UK, consumers were found to use the Internet as a primary medium with which to collate information on new product purchases (Dutton, Helsper and Gerber, 2009). Researchers have distinguished 'internet-forum information' from 'marketer generated online information' where the former was considered to be more credible, relevant and empathetic than the latter (Bickard and Schindler, 2001). Information that is considered more credible and trustworthy has been found to be more persuasive (Hovland and Weiss, 1951; Wilson and Sherrell, 1993). Persuasiveness has also been found to be greater if the information is relevant to the seeker (Price, Feick and Higie, 1989). Information that is supported by personal perspectives and experiences has been considered to be from a more empathetic source (Baym, 1995; Deighton, Romer and McQueen, 1989).

The volume of information about a product in certain VCs is argued to be a potential problem: on the one hand, products with a high volume of comments are perceived as being popular, but on the other hand, consumers may suffer from 'information overload' and not gain benefit from the information presented. In either case, those consumers who exhibit high levels of product involvement are more likely to be able to wade through the available information (Park and Lee, 2007a).

The other perspective is that of the poster, which is important as the vast majority of information contained in VCs is generated by the users themselves (Porter, 2004). The activity of sharing information may superficially be considered to be an altruistic gesture, although other motives are also seen to drive online knowledge sharing (Batson, Ahmad and Tsang, 2002). *Egoistic* motives indicate that the sharer's own welfare is the priority; *collectivism* suggest that the development of the community is important and *principalism* suggests that the author is primarily motivated by the desire to persuade others of a particular cause that is important to them (Batson, Ahmad and Tsang, 2002). These theoretical categorisations have been tested in relation to open-content project Wikipedia where they were broadly

supported (Nov, 2007). In another widely-cited study, in brand-related customer discussion forums, additional clusters were identified whose members appeared be motivated by multiple causes (Hennig-Thurau et al, 2004).

Relational – conversation and friendship - While information exchange is an important initiator of VC membership, social support is considered a key motivator to sustained membership (Bagozzi and Dholakia, 2002). It is defined as, "the degree to which a person's basic social needs are gratified through interaction with others" (Thoits, 1982:p147). Another important feature of VCs is that they offer the ability for those seeking support to find it quickly (Wellman and Giulia, 1999). A number of studies have linked peoples' desire to join a VC to their need for belongingness, as well as emotional support (Furlong, 1989; Hiltz and Wellman, 1997, Wellman et al, 1996). Further, the development of online friendships to supplement existing relationships is argued to be important to community members (Bagozzi and Dholakia, 2002).

Involvement in online conversations and relations may be necessary to access the right information (Bagozzi and Dholakia, 2002). However, for some, the ability to follow the conversations between others in open forums – known as lurking - may fulfil these needs (Preece, Nonnecke and Andrews, 2004). Separately, requests for specialist information or conversations that suggest that personal support may be initiated with no desire on the part of either party to develop a friendship; the purpose of the exchange is simply to fulfil the need for information or support (Bogazzi and Dholakia, 2002). For example, a teenager who suspects he may have contracted a sexually transmitted infection but who is too embarrassed to speak to friends may seek information and support from members of specialist communities. These may be received without an expectation of an on-going relationship with others but the advice may significantly influence his decisions.

However, a number of studies have shown that the desire to develop online friendships is an explicit motivator for people to join and participate in online communities (Rheingold, 2000; Wasko and Faraj, 2000; Saranow and Hayward, 2003). The creation of online friendships is often considered to be for the purpose of networking which is a term that is often used interchangeably with network. It is

important to clarify those terms: according to boyd and Ellison (2008), 'network' contains connections from one user to others with whom they have a connection; the act of 'networking' involves relationship initiation (boyd and Ellison, 2008). Research also suggests that most SNS support pre-existing social relationships with users maintaining contact with schoolmates, colleagues and friends with whom they may otherwise have lost contact (Ellison et al., 2007). In this way, it is suggested that such virtual communities enhance social capital (Wellman et al., 2001). It is through this type of computer-mediated communication that weak ties are developed and can be exploited for personal enhancement (Granovetter, 1973).

Structural – participation creates networks - The structure of VCs differs depending upon their focus and purpose (Wellman and Guilia, 1999; Li, 2004). According to Etzioni and Etzioni (1999), there are two essential elements to a VC: bonding and culture, both of which are critical to their operation and continuation. This has implications to designers which affect the on-going nature of the community: those which are bound by a common identity, where members have joined as part of a specific cause, behave differently from those where members share a perception of their own identity (Ren, Kraut and Keiser, 2007).

A particular type of VC which is of importance in this context is the online discussion forum where relationships are structured around a wide range of communication types, giving members flexibility and access to a wide range of information. Firstly, they couple synchronous and asynchronous interaction, meaning that users have the benefit of enjoying immediacy of conversations but do not miss out on the discourse if they do not view it until later. Second, the geographical distribution of members can be wide, offering diversity of perspectives over many cultures in some cases. Third, debates feature both one-to-one, one-to-many and group discussion giving flexibility. Last, members have the option of adding private dialogue to the public discussions. (Donelan, 2010).

Further, the development of technology which facilitates the easy sharing of personal information leads to greater satisfaction among community members and to a greater propensity towards knowledge sharing (Ma and Agarwal, 2007). However, editors of such communities need to be cautious of so-called 'information chaos' (Kear,

2010) although techniques can be employed to structure the information in a way that it is easily available to members (Hiltz and Turoff, 1985).

It is important not to assume that relationships in VCs are exclusive to a single site or format. Private communication may develop from relationships which start in a VC, which may then be conducted via a private messaging system within the forum itself, or via personal email or even face-to-face (Preece, 2001). However, in addition, people may develop relationships across a number of related communities, making the definition of populations in research in this area difficult to bound (Preece and Maloney-Krichmar, 2003).

Community Norms - The final element of VCs which make them important in relation to this study is the existence of community norms which guide the behaviour of members (Rheingold, 1993). They also help create an environment where opinion-leaders can influence others (Katz and Lazarsfeld, 1955). In common with off-line communities, VCs need to develop group norms in order to manage cohesiveness and conformity as well as ensuring effective decision-making; as such group norms play an important role in community productivity (Feldman, 1984). According to Lessig (2000) social norms are one of the key mechanisms by which the Internet is regulated. However, social norms are argued to be under pressure and subject to significant change in an increasingly networked society (boyd, 2011).

Norms can be considered to be somewhat organic; they develop over time and in informal ways as members learn which behaviours enhance and which are detrimental to the group values (Feldman, 1984). Inevitably the development of norms in this fashion includes primacy and carry-over behaviours, where the group essentially repeats patterns of behaviour through habit (Feldman, 1984). However, occasional "critical events" can accelerate the development of norms as ways to protect the community (Hackman, 1973).

Other research suggests that groups collectively create norms, which form the basis of the interaction within the group. Such norms create the framework of rules that outlines acceptable behaviour for group members who are expected to police other members' activities in order to maintain the norms (Katz et al., 1955). Groups are

made up of members who "actively seek each other out as companions" (p59) and 'value homophily' which is defined as the "mutual attraction on the basis of shared values" (p59) is the basis of the need to seek out companions. However, there is a potential conflict for users in that shared values may be the effect of being a member of the group rather than the cause of the individual's membership in the first instance (Katz et al., 1955).

Extending their argument, Katz et al (1955) propose three primary contributors to the development of group norms. First, as a result of shared values, individuals enjoy the benefits of conformity to group norms and that members desire to adhere to the "opinions, attitudes and habits" (p62) of those within the social reality they have jointly constructed. Second, members of groups are motivated to preserve the identity of the group, which they do by creating clear boundaries and demanding uniform behaviour. Finally, groups have goals, which cannot be achieved without consensus: "That is to say, uniformity of opinion may be a *pre-requisite* to group action" (p62). They cite an experiment by Kurt Back (1951) that found that the more individuals within a group feel attached to each other, the greater the extent to which they exert influence over each other.

The nature of the value homophily that attracted members of a community together initially forms a core part of the ways in which norms are policed. This affects behaviours such as adoption of new members, acceptance of social loafing, reciprocity and, ultimately, group robustness. Communities who share values and goals are more likely to be stringent in the policing of norms within the community (Ren et al, 2007).

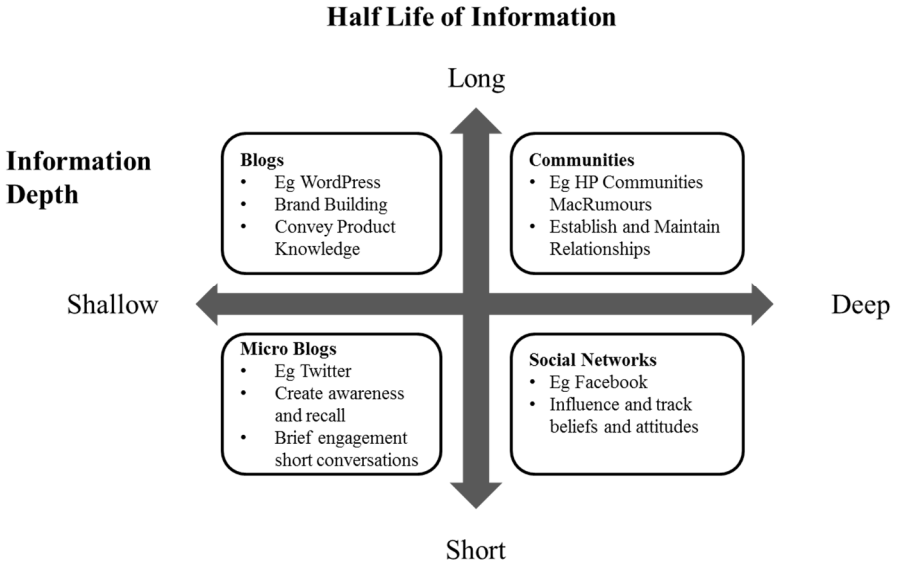
3.1.4 Importance of VCs to Brands

One feature of such communities is the capability of users to turn individual posts into 'threads' by responding to the original point and extending the discussion. In active communities, some threads may extend to many hundreds of messages and often discussion only stops when the community loses interest in the subject. However, the importance of this feature is that the header of the thread (that is, the title of the original message) is searchable both inside the forum and via search engines meaning that: (1) the information is available to a very wide audience and;

(2) that the content of the thread is available for a significant period of time (Pitta and Fowler, 2005). This is critical for firms as, often the top search result is from a community of this type, meaning that consumers may access community generated content more readily than brand-generated messages. For example, the density of relevant information on the digital photography review community DPReview® means that a search for a brand of camera will serve content from that community as readily as that of the camera brands' own websites.

In their discussion of the nature of firms' spending on social media, Weinberg and Pehlivan (2011) categorise the types of communities by the length of time information remains readily available to consumers.

Figure 3.5 – Half-life of information in VCs



Source: Weinberg and Pehlivan (2011)

It is important to distinguish between communities where the primary communication mechanism is text based rather than images or video. It is the text based communities – referred to by Burnett (2000) as "information neighbourhoods" – that are considered to provide the greatest level of knowledge, thereby influencing and shaping opinions of firms (Bagozzi and Dholakia, 2002).

A VC has been noted to play a significant role in certain stages of product evaluation, depending upon the state at which the consumer consults its members. For those in the early phase of evaluation, the 'community databases' play an important role, later, when decisions are being reached, the forum element becomes more important due to the ability to engage in conversation about their personal experiences. More social networks, such as Facebook, are primarily thought to be used to discuss post-purchase evaluations (de Valck et al, 2009). Given the context of the present research, these findings have underlined the focus on the first two stages and support the involvement of communities of interest rather than broader SNS.

The level of interactivity in a VC has an interesting effect upon the perception of both the website itself and the users it attracts: a high level of interactivity has been found to positively affect the perception of the community but have negligible effect upon the user (Thorson and Rodgers, 2006).

It is argued that all types of VC are of potential value to firms wishing to exploit social media (Pitta and Fowler, 2005; Barwise and Meehan, 2010; Kleinmann et al, 2011).

3.1.5 Formative Conclusion

A number of arguments have been made in this section of the literature review which support the context of the present research being within VCs. The first is that connected communities which share common interests or other type of bond are important sources of information and support. Second, that as communities develop, networks of relationships form which are supported by community norms and structures. These can be exploited by members to develop social capital and through which their opinions can be shared and propagated. Finally, that the nature of the information held within these types of VC is deep and has the potential to be accessed by both members and non-members for a long period of time, making them an important aspect of a social media strategy for firms.

3.2 Marketing Implications

3.2.1 Word-of-Mouth

The existence and effects of "Powerful networks of interpersonal relations existing within the consumer market" (Brooks, 1957: p154) have been found to be important sources of information regarding products. This phenomenon is known as Word-of-Mouth (WOM) and has been the subject of much research. It is noted to stimulate brand awareness as well as the propensity to purchase products (Whyte, 1954; Gray, 1973; Rogers, 1995). WOM is seen to supplement mass-media communications from brands and is thought to be particularly important in changing consumer attitudes (Engel, Kollat and Blackwell, 1968). The role of advertising has been found to create "preconditions for success… [whereas the challenge of] …creating and reinforcing favourable attitudes largely rested with the brand to generate favourable word of mouth communications." (Day, 1971).

As well as describing the phenomenon of individuals informing their friends and acquaintances of new products, WOM sometimes involves making explicit recommendations (Arndt, 1967; Day, 1971). It pre-dates most other marketing principles and, before the printing press, was the only way consumers could learn about product features (Ferguson, 2008).

In a series of studies on the strength of influence, WOM communications were found to be particularly strong in the event that the information passed from one consumer to another that disconfirmed the receivers' previously held position. This effect is especially strong where the WOM source is perceived to be an expert (Bone, 1995). In contrast, the presence of a prior judgement of the product was seen to weaken the effect of WOM (Herr, Kardes and Kim, 1991).

It is important to acknowledge that there are two elements to WOM; the transmitter and the receiver and without both, WOM is not seen to exist. In other words, the opinion seeker is as important as the opinion leader (Flynn, Goldsmith and Eastman, 1996; Reynolds and Darden, 1971).

Valence - An important aspect of WOM is its valence (Buttle, 1998). Both positive and negative WOM have been found to exert influence on consumers' behaviour and upon the brands' future performance. (Arndt, 1967). People who are satisfied with a product are more likely to provide members of their network with positive information than if they were simply loyal to the brand. Conversely, in the case of negative WOM, the effects are opposite; disloyalty has a stronger relationship with negative WOM than dissatisfaction (de Matos and Vargas Rossi, 2008). However, as Buttle (1998) points out the negative / positive terminology has been coined from the brand rather than the consumer's perspective. For example, a warning posted on Mumsnet® about the poor safety performance of a child's car seat may be seen from an expectant mother's point of view to be positive in helping her avoid a risky purchase. However, if the message receives significant attention this may result in a collapse in sales.

Evidence has been presented for a strong relationship between satisfaction and positive WOM (Bolton and Drew, 1992; Holmes and Lett, 1977; Reicheld and Sasser, 1990). However, in offering a new perspective, Anderson (1998) suggests the relationship is not a linear phenomenon that increases or decreases with the levels of (dis)satisfaction. It is argued that an asymmetrical U-shaped relationship exists where extremely dissatisfied customers are more likely to share their feelings with their friends (Anderson, 1998). This appears to provide empirical evidence of exploratory findings that the level of (dis)satisfaction is directly proportional to the extent of the customer response in terms of the number of people they report to (Richins, 1983).

In a study of the density of WOM related to cinema releases, four factors were found to generate online WOM: (1) extreme (dis)satisfaction, (2) disagreement between different posters on the quality of the film, (3) availability of the film in a wide range of cinemas and (4) the volume of publicity material in circulation (Dellarocas and Narayan, 2006). Although the authors do not explicitly conclude this, the study appears to suggest that there is significant interaction between the amount of studio released 'buzz' and the WOM generated.

The generation of WOM in the event of negative reviews appears to be product dependent: negative reviews have been noted to lead to a reduction in sales of books (Chevalier and Mayzlin, 2006) but an increase in box office traffic (Liu, 2006). In contrast, however, in a separate study, the valence of WOM in the opening week of a cinema release was a reliable predictor of the film's likelihood of success in subsequent weeks (Dellarocas, Awad and Zhand, 2005).

In tests of the credibility of WOM sources, where groups of messages regarding a product were all positive, they lacked credibility when compared with groups that were predominantly positive but with some negative messages interspersed (Doh and Hwang, 2009).

The valence of the message has been argued to interact with the type of community in which it has been posted. Positive reviews on either independent or brand-managed communities were more likely to change the readers' perceptions, intentions and behaviour than if the same message was read on a personal blog. However, in the case of a negative message, no difference was noted, regardless of the source. (Lee and Youn, 2009). In another study, negative messages were found to be more impactful than positive but a site's positive reputation magnified the effect in either case (Park and Lee, 2007b).

Motivations - Some scholars argue that WOM is often caused by those who are deliberate in their wish to influence their audience (Whyte, 1954; Katz and Lazarsfeld, 1955). However, in tests where explicit links between discussions which could be classed as contributing to WOM and later purchasing behaviour, such discussions appeared to be a simple process of expressing personal opinions with no purposive intent to influence (Arndt, 1967).

A number of studies have examined the motives for consumers to engage in discussions that contribute to WOM. In one of the first categorisations, Dichter (1966) identified four motives for creating WOM: (1) the consumers' involvement in the product; (2) their attempts at self-enhancement by establishing a perception of knowledge or expertise among others; (3) a more altruistic desire to help another person and; (4) to share interesting information gleaned from marketing or sales

materials. Another early study suggested that the fourth motivator should be replaced by the desire by an individual to reduce the likelihood of dissonance (Arndt, 1969; Engel, Kegerreis and Blackwell, 1969). In later research, motives have been found to be supplemented by a desire to help the company or conversely in the case of negative WOM to seek 'vengeance' for a negative experience (Sundaram, Mitra and Webster, 1998).

The communicator's involvement in the product is a recurring theme among these studies. This has been shown to have two dimensions: first, situational involvement describes a temporary interest, which, may dissipate post-purchase. Second, enduring involvement describes a long-term interest in a product, perhaps as part of a hobby (Richins and Root-Shaffer, 1988). It is the latter which is seen to be of particular importance, where enduring involvement is an antecedent to opinion leadership, which, in turn is critical in the presence of WOM (Richins and Root-Shaffer, 1988).

Others argue that product involvement, particularly of an enduring nature, as evidenced by the content and nature of the communication from the opinion-leader, is important in effective influence (Richins and Root-Shaffer, 1988; Petty, Cacioppo and Goldman, 1981). Further, various personal characteristics, such as credibility and perceived knowledge were found to be important in the effectiveness of the source of information as part of WOM (Gilly et al, 1998). By presenting these parts of themselves to build their reputation, people can develop their own sense of 'self-confirmation' (Dichter, 2000).

Some theorists may argue that the desire to share information in an instrumental way is part of an on-going reciprocal process of developing social capital (Woolcock, 2001; Lin, 1999). Indeed the categorisations of opinion- leadership (Katz, 1987) are similar to the sources of social capital (Nahapiet and Ghoshal, 1998).

3.2.2 Electronic Word-of-Mouth

The adoption of the Internet into daily use by an ever-increasing global population (Dutton, Helsper and Gerber, 2009; Pew Research Centre, 2010) has caused a significant shift in the effects of WOM in both a pre- and post-purchase context

(Hennig-Thurau et al, 2004; Dellarocas, 2003; Hung and Li, 2007). So called 'Electronic Word-of-Mouth' (eWOM) has been established as an important complement to other forms of promotion (Trusov, 2009) and has been argued to be an important tool for twenty-first century marketers (Reicheld, 2003; Kelly, 2007). E-WOM is argued to be more influential than traditional WOM due to its speed, ease-of-access and use, the potential to reach a wide audience with a single message and the lack of pressure present in face-to-face communication (Phelps et al, 2004).

These changes in communication behaviour have affected consumers' expectations of where, how and from whom information is acquired about products, services and brands (Valos, Ewing and Powell, 2010). Some regard the online and offline characteristics of WOMM to be distinct from each other (Modzelewski, 2000). However, the discipline is now generally considered to include a range of sub-categories including social media marketing, viral marketing, electronic word-of-mouth (e-WOM or 'word-of-mouse') and buzz marketing (Datta, Chowdhury and Chakraborty, 2005; Porter and Golan, 2006).

The role of the website administrator or editor is seen to be important, particularly the extent to which discussion threads or particular reviews are given editorial prominence in the site; such cases have been regarded as 'structured e-WOM' and this has been reported to have an effect upon both the cognitive processing of messages and upon the nature of social relations in the community (Hung and Li, 2007).

e-WOM has been noted to have a symbiotic relationship with the community in which the content is held, where 'searchable' content has a positive effect on the site's Page Rank, with highly-valued content accounting for 10% of the growth in the community as a result of it driving new users to the community (Dwyer, 2007). An important feature of online communities that contribute to WOM is the existence of online feedback mechanisms and reputation management systems as they are seen to contribute to trust and cooperation within the community (Dellarocas, 2003).

One phenomenon of e-WOM which has generated interest in recent years is the introduction of online consumer review sites, which allow individuals to share their

experiences and opinions of products (Avery et al, 1999). Some see these communities as being complementary to more sophisticated expert reviews or firm-created information about the product (Chen and Xie, 2008; Hennig-Thurau et al, 2004). Such sites have been suggested to be important in the direction of product and service choices, with consumers who were found to follow online recommendations in reviews to have purchased the recommended product twice as often as those who did not consult the review site. (Senecal and Nantel, 2004).

3.2.3 Measurement of Word-of-Mouth

Researchers have been convinced of the value of WOM as a supplement to other forms of marketing communications for many years (Arndt, 1967; Day, 1969). Further, according to Reicheld (2003), the extent to which a firm's customers consider themselves likely to recommend its products or services to friends is the key metric it should measure. However, until recently, formal measurement of actual WOM, as opposed to referral or recommendation intentions, has been problematic. One way of achieving this is to include the value of voluntary referrals into customer lifetime value (CLV). Hogan, Lemon and Libai (2004) noted a significant uplift in the value of certain customers who regularly recommended a particular telecommunications service to their friends. This was compounded by a so-called ripple effect, meaning that those with strong ties in their networks who are ready to accept the recommendation and to pass it on were of particular value. In a later study, this concept was extended to include algorithms which calculate CLV and customer referral value (CRV) to segment a customer base into four groups including both measures. It was interesting to note that the CRV in some cases increased the customer's overall value to the firm by 300% (Kumar, Peterson and Leone, 2007). This is an important study as it appears to be the first quantitative measure of the value of Influentials.

Trusov, Bucklin and Pauwels (2009) also found a "concrete and measureable link between observed WOM activity and customer acquisition" (p96) and noted a significant relationship between that and traditional marketing techniques.

These studies, then, tend to confirm the long held view that WOM is a valuable complement. Tests into the efficacy of WOM versus 'external marketing efforts'

(e.g. advertising) found that beyond the growth cycle of a new product, the value of the latter diminished and that information about the product was predominantly passed through network contacts. (Goldenberg, Libai and Muller, 2001).

In further tests of network attributes and their effects on WOM efficacy, strong and weak ties were found to be of equivalent value, in other words long-term, close friends are just as likely to accept a recommendation as acquaintances, although the effectiveness of strong ties diminishes in proportion to the size of the recommenders' network. (Goldenberg, Libai and Muller, 2001).

There are three significant problems with measuring WOM: (1) direct observation is difficult; (2) in the case that the first issue is overcome, identifying the relevant parts of the conversation are equally problematic and; (3) using WOM to predict future sales is inaccurate as a reflection of past sales. In a model which aimed to resolve these issues, they find that they could consistently predict future ratings of new television programmes from the 1999-2000 season based on the volume of discussion in a related Usenet community (Godes and Mayzlin, 2004).

3.2.4 Engineering WOM

Word-of-Mouth Marketing (WOMM) refers to the broad range of techniques used by firms to exploit the phenomenon of messages passing from one consumer to another, attempting to engineer the nature, tone and speed of the diffusion of such messages: "the intentional influencing of consumer-to-consumer communications by professional marketing techniques." (Kozinets, 2010: p71)

The techniques for managers to stimulate positive and suppress negative WOM were summarised by Bayus (1985), suggesting that firms need to be flexible depending on market conditions.

Figure 3.6 – The Impacts of Marketing Efforts on Word-of-Mouth.

The Impact of Marketing Efforts on Word of Mouth

Marketing Efforts	Stimulate positive word of mouth	Retard negative word of mouth
Increase	Trigger need for more information	Provide information / handle complaints / rumours
Decrease	Trigger need for information from other sources	Reduce public visibility of firm

Source: Bayus (1985)

This has become an important area for marketers leading to the development of specific techniques to exploit the opportunities it presents, while mitigating the threats (Wilson, 2000; Meerman-Scott, 2010).

One of the most important ways a firm can encourage positive WOM, often with a measurable outcome, is by stimulating referrals (Wilson, 1994). This is of particular value to professional networks and has special relevance to business-to-business networking, but, particularly in the case of VCs, where recommendations can reach many; this also benefits business-to-consumer situations.

Firms are advised to consider consumer-created content as being complementary to that which they create themselves and to recognise that the two types of information interact in order to create an overall picture in the minds of consumers (Chen and Xie, 2008).

Viral Marketing - First use of the term 'Viral Marketing' (VM) has been claimed by venture capitalists Steve Jurvetson and Tim Draper (1997) in describing the methods used by Hotmail to launch the world's first widely-adopted free email service and this example has become one of the most widely used case studies for successful adoption of VM. Of course, the Hotmail case relied on the use of email as the primary communication mechanism (Porter and Golan, 2006) but the advent of Web 2.0, which is characterised by the introduction of peer-to-peer communications and where communities become an important place for brands to engage with consumers (Cova and White, 2010) has changed the nature and opportunity for the viral effect.

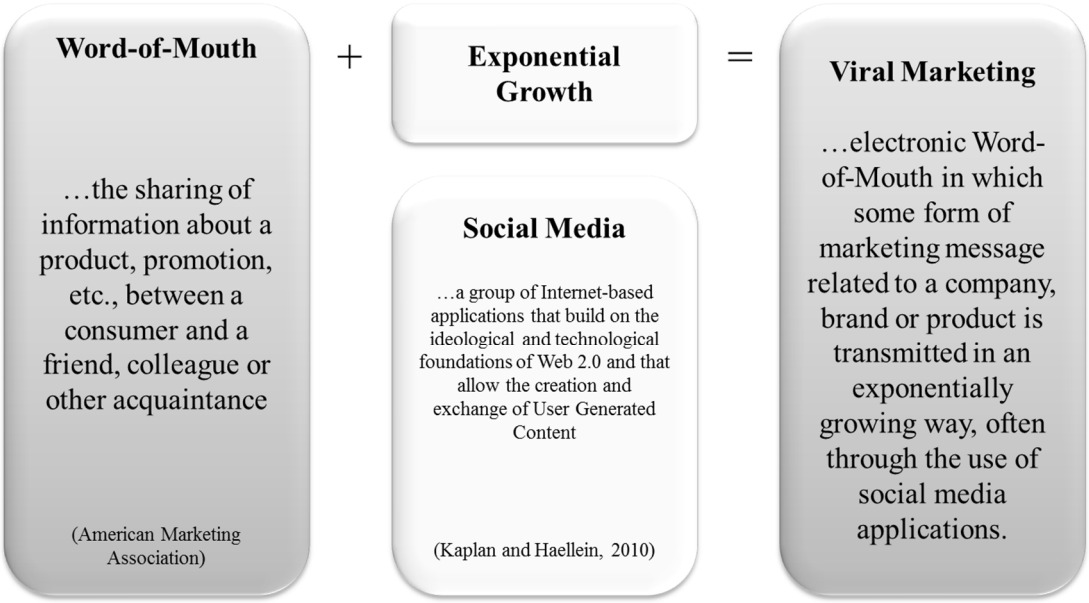
The discipline of VM has evolved in parallel with the technology that powers the Internet and has progressed from attempting to entice email users to forward a message to their contacts, to 'sharing' via SNS and other types of VC.

VM refers to the strategy of managing the viral effect, whereas the specific tactics, such as creating the messages and ensuring they are distributed around a network are referred to as Viral Advertising (VA) (Petrescu and Korgaonkar, 2011). While there has been some debate on their relationship with WOM (Modzelewski, 2000) the general view tends towards establishing Viral Marketing as a sub-discipline of WOMM (Datta, Chowdhury and Chakraborty, 2005; Porter and Golan, 2006).

Related technological advances such as digital video cameras and editing software have meant that user generated content is now widespread on the Internet (Cha et al, 2007). Recent definitions of VA as the technique of managing the distribution of messages from consumer-to-consumer have recognised that the management of user generated content is an important aspect. Examples are You Tube® spoof advertisements, which reflect a brand promise and have the potential to be highly impactful to brands. They represent the opportunity for value or a threat and should therefore be controlled or influenced by the brand insofar as this is possible and appropriate (Petrescu and Korgaonkar, 2011). Viral messages have been categorised as either 'random' which broadly refers to those messages that are placed for non-commercial reasons and 'placed virals' which identify those which were deliberately placed by brands in the hope that they would reach a wide audience at low distribution cost (Cruz and Fill, 2008).

A particular technique of VA is the seeding of specific messages to influential members of communities in the hope that they will pass it along to members of their network whose attitudes may be affected or reinforced (Stonedahl, Rand and Wilensky, 2010). This assumes that certain members are likely to influence the decisions of others. Recent conceptions of viral marketing suggest that it is characterised by the frequent use of social media as a communication method (for example sharing a user or brand generated video on You Tube® via Facebook®). It is through such media that exponential growth in awareness is generated. (Kaplan and Haenlein, 2011).

Figure 3.7 – Relationship between word-of-mouth and viral marketing



Source: Kaplan and Haenlein (2011) p254.

3.2.5 Formative Conclusions

WOM has historically been an important part of the marketing landscape and continues to be seen as a complement to brand created mass communications (Day, 1971). The importance of WOM is seen to be increasing in recent years as the offline form is supplemented by the act of passing along product and brand information through networks of connected consumers via the Internet in so-called e-WOM (Hennig-Thureau et al, 2004). Brands can adopt a number of techniques which aim to control the tone, direction and speed of messages as they are passed-

along or shared in online networks, for example, 'seeding' messages with influential members of the community (Kozinets et al, 2010). Viral marketing is a specific form of WOM where exponential growth of awareness message or other content can be witnessed (Kaplan and Haenlein, 2011).

However, as can be seen in the following section, researchers are not in full agreement on the causes of the flow of such messages, particularly the role of the Influential in its diffusion.

3.3 The Diffusion of Ideas in Communities

3.3.1 Memetics

The term 'meme' was proposed by Richard Dawkins (1976) to define "an idea, behaviour, style or usage that spreads from person to person within a culture" (Blackmore, 2000). It is argued that, in common with genes, memes are replicators and see each human being as a potential to reach a wider audience (Dawkins, 1976). As such, they serve their own motives wherever possible (Blackmore, 2000). While primarily considered a human phenomenon, evidence exists of the effect of memes in other species, for example blackbirds who recognise the presence of threats by observing the behaviour of their companions (Dugatkin, 2000). Examples of memes which relevant to the present study are: (1) stories, urban legends and myths; (2) fashion trends and; (3) inventions and theories (Blackmore, 2000). The evolutionary basis of the idea is that a huge variety of memes compete for attention which leads to survival via inculcation into human memories and ultimately into culture (Blackmore, 1999).

The central idea that memes are spread by replication is the primary source of critique of the theory. Imitation is imperfect even in cases where information is passed directly from one person to another, but when a communication medium is introduced, the likelihood of a breakdown increases (Boyd and Richerson, 1985). That an idea may be passed along from one member of an online community to another quickly and easily has gained much attention among social network analysts. It is perhaps due to the ability of members of VCs to replicate the entirety of a meme by a simple 'share' or 'copy+paste' computer process is at the basis of the viral nature of such communications.

Imitation is a critical part of the replication process but in each 'host' the meme is processed against a background of personal values or perceived norms, referred to as 'schemas'. This introduces a subjective element which inevitably alters the meme as it is passed from one person to another making it too complex and unpredictable to fully explain cultural development (Plotkin, 1993). Further, those who exhibit greater interest in a subject are prone to elaborate the core idea during its progression to others (Boyd and Richerson, 2000).

However, the counterpoint to these critiques is that the original conception of the meme as a replicator had 'modest intentions' (Blackmore, 2000). The adoption of memetics in the context of the present research is simply to utilise an appropriate term that covers the wide range of ideas passed through VCs which contribute to the community itself and to wider understanding of product or services. However, this is not to undermine the importance of the concept; according to Brodie (1996): "everything we call "culture" is composed of atom-like memes" (p27), which, in the context of the present study, means that the agglomeration of memes make up the behavioural and cognitive norms that control communities.

3.3.2 Network Structure and Social Capital

The structure of networks affects the nature of communications and the sources of social capital. The origination of this concept can be traced to Granovetter (1973) and examines the extent to which the frequency and emotional intensity of the social exchanges affect the strength of the ties. The concept includes the idea that strong and weak ties fulfil different roles for individuals: the former providing support and the latter offering opportunities that would normally be out of the reach of closed network (Granovetter, 1973).

This thinking has been extended by the introduction of the idea of structural holes (Burt, 1992) which identifies the gaps between groups of people with strong ties, recognising the roles of 'bridges' who are people who have network ties which bridge different groups. Burt's core idea is that social capital exists between the relationships as well as within them and that opportunity arises for individuals to benefit from it (Burt, 1992, 2000).

Other social capital theorists have recognised the importance of network position for the accumulation and exploitation of social capital (Lin, 1999). Network hierarchy and, particularly proximity to powerful individuals at the top, is seen as important because it provides access to opportunities for personal gain (Adler, 2002). However, in a VC each member has equal potential to gain access to and build relationships with important and influential members (Rheingold, 1993). Theoretical conceptions of VCs have traditionally considered them to be free of formal hierarchies and de-centralised (Beyerlein and Johnson, 1994; Baker, 1992). However, empirical evidence has suggested that they are both hierarchical and centralised, albeit that these are informally organised, as the community develops its communication patterns and norms (Ahuja and Carley, 1998).

As online communities and, more generally, the Internet, have become increasing culturally important, much attention has been paid to understanding the structures and workings of the networks and communities that exist.

3.3.3 Social Network Analysis

In a recent study of isolated, nomadic Hadza communities in Tanzania, researchers identified that the network structures were similar to those in developed nations in the modern, industrialised world. When asked who they would choose to live with when the current camp was reconstructed elsewhere, Hadza tribes members were more likely to name those to whom they already lived near rather than those who lived further away in the camp. Additionally, similarities in terms of age and physical attributes increased the likelihood of neighbourhood proximity (Apicalla et al, 2012). The authors conclude that centrality is critical irrespective of the nature of the network.

The ready availability of network data which can be modelled using computer software has led to the development of a range of new techniques in recent years. The aim of these is to focus on the relational aspects of the network structure (Scott, 1992). A core assumption of social network analysis (SNA) is that interactions exist as part of the social networks and that four relational concepts are considered to be particularly important: (1) actors within networks are considered interdependent; (2) the ties are channels for the flow of resources; (3) the network structure provides

opportunities and constraints to action; and (4) the network models create patterns which may last over time (Wassermann and Faust, 1994)

SNA focuses on the relationships between the members of a network, and, as such, the attributes, attitudes or behaviours of the members are not pertinent. However, outcomes of the relationships and the emergent effects are often considered the dependent variable. (Cross, Borgatti and Parker, 2002). For example, the dependent variable in a number of key SNA studies is personal influence, specifically, the extent to which the diffusion of a message may be different when issued from an influential community member. Network centrality is an important feature of social network analysis (SNA) and appears as a common theme among empirical studies of this nature (Wassermann and Faust, 1994).

The 'small world' concept originated with a manuscript authored by Pool and Kochen in 1958 which was not published for 20 years, but which stimulated ideas by Stanley Milgram (1967) to identify chains of connections between people. The small-world approach is the basis of the type of SNA which is of particular pertinence to the present study as it traces the diffusion of memes within a community (Milgram, 1967). Further the approach monitors the extent to which its progression may be hastened by the intervention of Influentials (Pool and Kochen, 1978). Given the right communication environment (one obvious example being the Internet), messages could be passed on in the way of a viral infection (Watts, 2007).

The resultant use of 'contagion' as a design principle has been enthusiastically adopted by the founders of SNS as well as in the computing systems on which the networks reside (Kleinberg, 2008). This maximises the opportunity for people to pass-along messages, for example, by 'sharing' content, where entertainment videos or user-generated news stories are spread around the globe in a matter of hours.

This type of online behaviour creates opportunities to capture data on how the content has travelled which can then be analysed. The method is based on the Susceptible – Infected – Susceptible (SIS) model of epidemiology and allows researchers to identify cascades which indicate the diffusion of new ideas (Lescovec et al, 2007). A number of influential studies on the progression of memes through

online networks are based around the principle of email progression, for example a cartoon or joke being passed along using email as the communication channel (Adamic and Adar, 2005; Phelps et al, 2004). However, more recently the focus has shifted from diffusion via email to VCs which utilise a one-to-many model via sharing, re-posting or automatic alerting a member's community contacts when a comment is added to a thread. Table 3.2 summarises the studies, using the approach recommended by Cooper (1989).

Table 3.1 – Network Analysis – Themes (overleaf)

Analysis of Online Influence				
Author	Context	Method	Dependent Variable	Key Finding
Ganley & Lampe (2009)	Users of VC 'Slashdot'.	Regression model of network relationships and effects of the site's reputation score (Karma).	Personal influence.	Brokerage exists with those a lower level of karma and closure is associated with those with higher karma levels.
Lyons and Henderson (2005)	Student sample of internet users.	Regression model of opinion-leadership.	Personal influence.	Opinion leaders in CMC possess higher levels of enduring involvement, innovativeness, exploratory behaviour and self-perceived knowledge.
Steffes and Burgee (2009)	Members of review website 'ratemyprofessors.com'.	Regression model from responses to online questionnaire.	Personal influence.	Information provided by weak ties where high perceived homophily exists is more influential than those with whom they have strong ties.
Huang (2010)	Posters on student travel sites.	Regression model (Tobit model) for data in posts captured from the sites.	Personal influence.	Posts which shared personal experience were more influential than those which simply contained a positive review.
Motivational Analysis				
Author	Context	Method	Dependent Variable	Key Finding
Brown, Bhadury and Pope, (2010)	Experiment to observe behaviour in a commercial panel.	Testing viewers' likelihood to pass along firm-generated viral advertisements depending on content.	Motivation to pass along.	Ads with a high level of comedic violence, especially where consequences are greater, are more likely to be passed along.
Eckler and Bolls (2011).	Experiment to observe behaviour among 42 students.	Testing viewers' likelihood to pass along firm-generated viral advertisements and their attitudes to the brand, depending on tone.	Motivation to pass along.	Ads with a pleasant tone were more likely to have a positive association with the brand. Attitudes towards ads with a coercive tone were weaker and an unpleasant tone was weakest.
Dobele et al (2007) .	Qualitative study among 20 respondents viewing 9 sample viral ads.	Testing viewer's perceptions of emotional content of "successful, global" (p295) viral ads.	Motivation to pass along.	Effective viral ads need to include an element of surprise, must connect emotionally, capture the imagination and be clearly targeted. Gender was found to moderate.

Contagion Modelling				
Author	Context	Method	Dependent Variable	Key Finding
Kitsak et al (2010)	Members of 4 large-scale networks in US and Sweden.	SIS models tracking rumour spreading.	Personal influence.	Most efficient spreaders are those located in the core of the network rather than those who were most connected.
Watts and Dodds (2007)	Posters in experimental network.	Cascade analysis modelling top 10% 'influential' members vs others.	Personal influence.	Influentials category posted more regularly than others and created more cascades but the nature of such were no different from others
Centola (2010)	Adoption behaviour in an experimental network.	Study of the spread of reported health behaviour.	Personal and social influence.	Adoption was more likely when a suggested behaviour change received social support from multiple neighbours in the network.
Leskovec et al (2007)	Analysis of 45,000 blogs with 2.2m blog-posting.	SIS model to propose a conceptual model for analysing cascades.	Personal influence and message content.	Popularity of posts drops off to a predictable pattern (power law) but the depth and size of the cascade depended on the subject.
Bakshy et al (2011)	Analysis of 1.6m users of 'twitter.com' tracking 74m diffusion events.	Tracking cascades via re-tweets.	Personal influence.	Largest cascades caused by those who have been able to create cascades in the past and who had the greatest number of followers.
Gomez-Rodrigues et al (2010)	Analysis of 170m blog posts.	SIS model testing progression of information flows.	Networks and personal influence.	News sites are organised in a core-periphery structure and have circles of influence which act as connectors.
Cha et al (2007).	Analysis of user-generated content (UGC) in 'You-Tube.com'.	Analysis of the distribution of UGC and the reduction in popularity.	Content.	Popularity of videos reduces in a predictable formation (power law)
Lescovec, Singh and Kleinberg (2006).	Posts from 4m posters who made 16m recommendations.	Counts of cascade sub-graphs in networks, noting patterns.	Personal influence.	Cascades in recommendation networks tend to be shallow but sometimes large bursts occur.
Leskovec et al (2008)	Posts from 4m posters who made 16m recommendations.	Testing patterns of recommendations in the community using stochastic analysis.	Personal influence.	In general, recommendations were not effective at inducing purchases and did not spread widely.
Cha et al (2010)	Influence patterns from 'twitter.com'.	Testing progression of tweets via mentions and retweets in comparison with numbers of followers noted.	Personal influence.	Members with high numbers of followers are not necessarily influential. Those who are influential tend to be so across a number of subjects and influence tends to result from communication style.

As can be seen from the review of the contagion based studies, there is some debate on the antecedents or causes of such influence which poses the question of whether VM is a 'push' or 'pull' technique (Keller, 1999).

First, is the argument of reputation, engagement or knowledge as suggested by the proponents of personal influence theory (Katz and Lazarsefeld, 1955; Keller and Berry, 2003; Weimann, 1994). This perspective is supported by those who have researched the role of influencers in VCs (Brown, Broderick and Lee, 2007; Kozinets, 2010). Second is that influence is accidental and is simply a matter of contacts: "a critical mass of easily influenced people, each of whom adopts a look or a brand after being exposed to a single adopting neighbour" (Watts, 2007: p22).

While the latter has gained traction in recent years, there is evidence that influence is gained through focused effort and use of specific communication techniques such as clarity of message (Cha et al, 2010). Spikes can be observed in the subtle patterns, known as 'cascades' within social networks which indicate the direction of communication; these are hypothesised to be content-related (Lescovec, Singh and Kleinberg, 2006). Similar effects have been observed in brand-seeded messages by Bakshy et al (2011) which are interpreted to mean that exchange of information appears to play a role in influence and meme progression. This leads the tentative conclusion that, rather than merely tapping into innate influenability among the audience, the message must therefore be considered in some way to be more persuasive.

One possible explanation of the difference in findings may be explained by methodological issues. Cha et al (2011) do not elaborate on the specifics of their network assumptions, although Watts and Dodds (2007) explain that they adopt a core epidemiological assumption that individuals have an equal probability of being infected each time they interact. Therefore, logically, increased exposure leads to an expectation of increased likelihood of infection. However, Leskovec et al (2008) have cast doubt on these findings in two ways: first, in a study of 16m posts between 4m individuals they observe that propensity to purchase a recommended product increases with the number of times it is recommended to a certain level, after which a drop-off is noted. Further, they have indicated that extremely highly connected

individuals (of the type in focus on Watts and Dodds' study) become "super-spreaders" meaning that their recommendations are of greater influence. Both are contrary to the findings of Watts and Dodds (2007).

Meme progression through a network has been noted to follow a rule of "three degrees of influence" (Christakis and Fowler, 2011) which identifies a significant effect size in the first second and third connections of a network, which disappears at the fourth. This theory was deduced from analysis of the Framington Heart Study (FHS) which is a longitudinal study spanning from 1948-2002 and investigates risk factors for cardiovascular disease. Using the FHS dataset, the theory has been empirically tested in the context of the contagion of happiness, loneliness, obesity and smoking (Christakis and Fowler, 2007, Christakis and Fowler, 2008, Fowler and Christakis, 2008; Cacioppo, Fowler and Christakis, 2009). At the aggregate level, the three steps of influence appeals intuitively and is supported by strong context-based evidence.

As Christakis and Fowler (2011) point out: if an individual is directly connected to 20 others in a social network whose opinions we may be able to influence, and each of those is connected to a further 20, then 3 steps of influence suggests that we all have the potential to influence 8,000 people. However, it is the contention of this researcher that this calculation is based on *aggregate* numbers therefore masks differences between individuals. A crude example is that if the study contains a cluster of individuals, who as a result of their personal attributes, communication style and network connections can influence 40 people in the social network then those have the potential of influencing 64,000. More pertinently, however, if the same person were – as the result of whatever means – able to create a cascade that went just one step further than the average, assuming their network contacts were the same (20) then the total influencable audience would be 160,000.

3.3.4 Formative Conclusions

Three formative conclusions can be drawn from an evaluation of the studies identified. The first is that the majority of the studies have employed contagion related techniques to study personal influence in VCs. Second that the studies that focus on the attitudes and behaviours of VCs are under-represented and have no

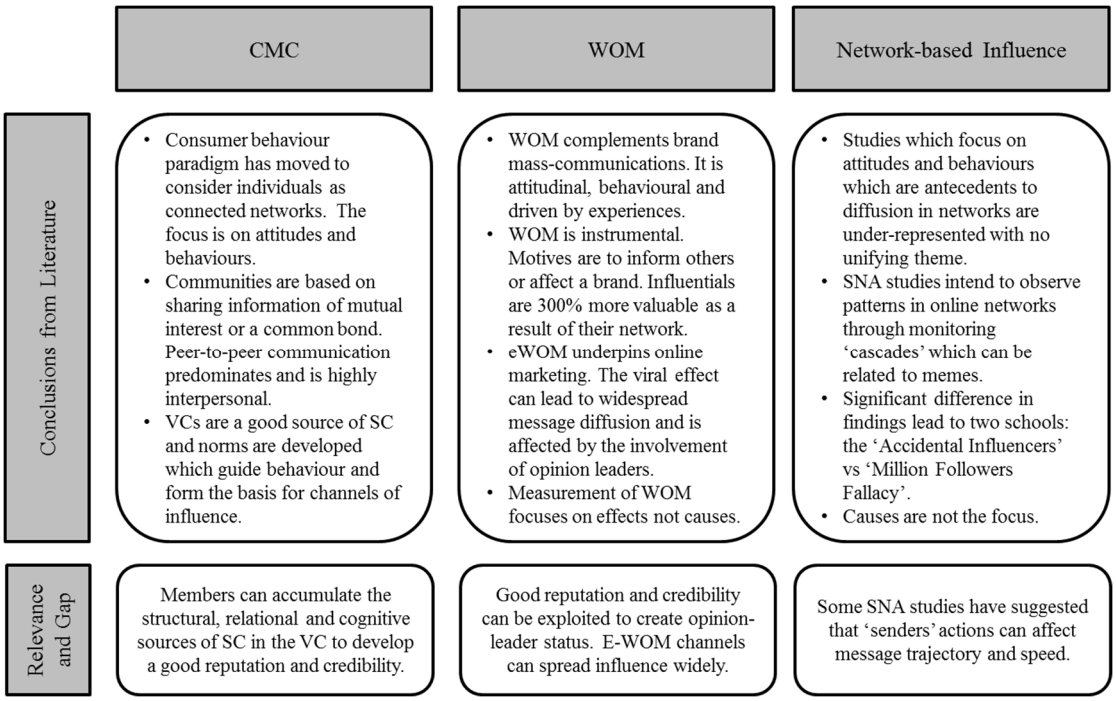
unifying themes. These conclusions support the main aim of the present research which is to investigate the overall model of influence. The third conclusion is that while the contagion modellers appear to approach the subject from the same ontological positions, there is significant difference in their findings. The third conclusion supports the present study as the study of antecedents to pass-along behaviours may illuminate the currently opposed debate.

If certain messages or members of a community are more influential than others, then it is logical to conclude that their communications must be in some way more persuasive than others. It is then useful to consider the literature on this subject.

3.4 Conclusions and Research Question

A number of key arguments and formative conclusions have been outlined at the end of each sub-section and are summarised in Figure 3.6.

Figure 3.8 – Summary of key arguments and conclusions



In aggregate, these lead to the conclusion that a study into the *behavioural aspects* which can be considered antecedents to influence would be a useful contribution to the body of knowledge, indicating the direction of future research on this subject.

WOM scholars are broadly united in the view that certain individuals are more influential than others. This is due to their personal relationships, their knowledge and credibility and their ability to reach a wide range of others. Some SNA has supported this argument, this is not a common conclusion, with others arguing that sender attributes are not important. This offers an important gap into which to make a contribution.

Although it has received much attention in previous years, Web 2.0 is a relatively recent phenomenon and as such is much less well-understood than offline interaction. There is therefore a need to understand the extent to which behaviour online differs and in what circumstances. Hence this is the focus of the present study.

In deciding the specifics of where to gather data, the work of Weinberg and Pehlivan (2011) was important: the depth of discussion in virtual communities compared with the length of time it is available for viewing were important factors. Further, the ability to search this information within and outside of the community was also important. This made specialist communities the appropriate option when comparing them to: (1) blogs, which are searchable and which convey product knowledge, but were considered disparate, meaning it would be difficult to assess the relational constructs; (2) social networks, which have the relational element but are unlikely to have the appropriate length or depth of content to assess the cognitive constructs and; (3) micro-blogs, such as Twitter which were considered not to be appropriate sources for either relational or cognitive data within single tweets (while some tweets link to deeper information like articles or blogs via shortened URL services such as 'bitly', this was too complex to consider in a single survey). [This leads to the following existing paragraph which is included for clarity.]

It has been clearly established that online communities of interest are valuable to consumer brands where information can be accessed that may influence brand perception, purchase intentions and behaviour for a long period of time. It is concluded, then, that these communities are an appropriate source of data for a study of the type outlined.

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It is important to conclude this chapter with a clear, relevant and unambiguous research question which has been derived from close attention to the literature and which has the ability to contribute to the gap in the literature. The research question is derived from the arguments above.

RQ: What combinations of post and poster characteristics affect influence within a community of interest?

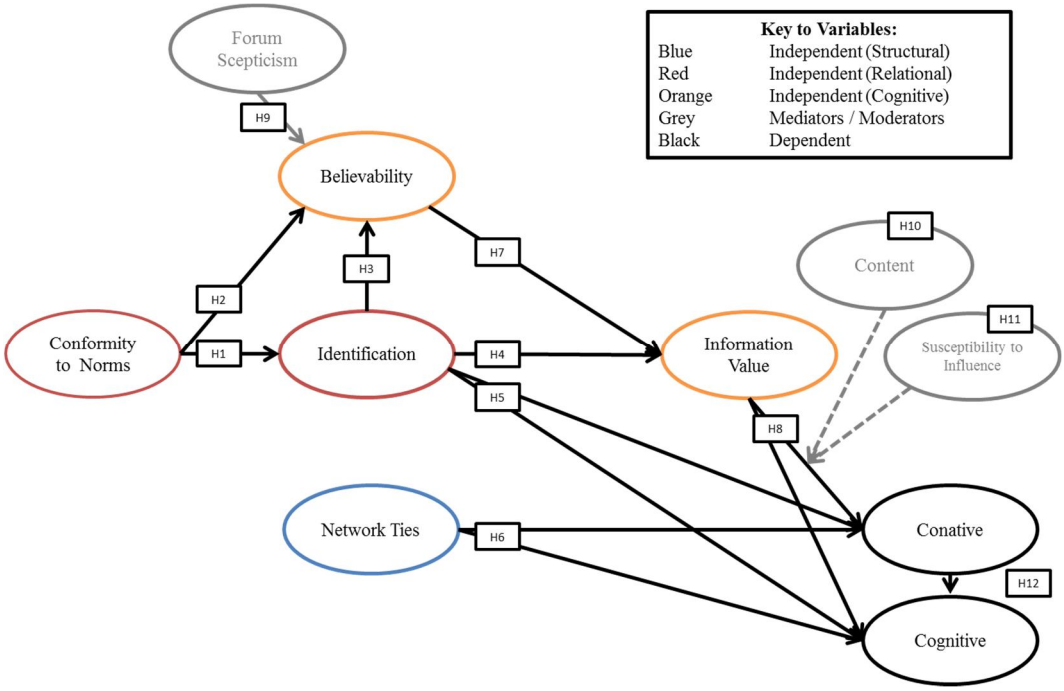
The aim of this research question is to establish a generalizable model of influence which can be considered to be of practical and theoretical value.

Chapter 4 outlines the development of a conceptual model which is underpinned by a range of testable hypotheses aimed to establish the existence of relationships between a range of established constructs. In common with many of the SNA studies outlined in Table 3.1, personal influence is the dependent variable, but in this case, the intention is to measure the likelihood to propagate a message and the extent to which the message affected the respondents' perception of the subject as separate dependent variables.

4 Hypotheses Development

The hypotheses are based upon the theoretical foundation outlined in Chapter 2, that social capital can be accumulated in virtual communities and that it can be expended in the form of uninvited, purposive influence. The central premise of this chapter is that if the sources of social capital can be measured, their effect upon the extent to which readers of a message can be influenced may be predictable. This premise is outlined in Figure 4.1 which is the core of the conceptual model: sources of social capital (independent variables) lead to influence dimensions (dependent variables).

Figure 4.1 –Conceptual Model



The sources of social capital are drawn from Nahapiet and Ghoshal (1998) and the conative and cognitive dimensions of influence are inspired by Lavidge and Steiner (1961). However, this does not present a complete picture and additional constructs are included as mediators and moderators, which are also discussed in this chapter. The constructs are outlined in the Table 4.1.

Table 4.1 – Summary of Constructs

Category	Construct	Contextualised Definition and Discussion
Relational sources of social capital (Independent Variables)	Conformity to Norms	The perception by members of the community that another member fits in with the expected behaviour as developed, defined and policed by the community members themselves. (Wellman, 1999).
	Identification as a Credible Source	Identification refers to recognition of a members' position by other members of a group (Sluss and Ashforth, 2007). In this case of the "general evaluation of the affiliative relationship between the source and the receiver" (Berlo, 1969 p574).
Structural sources of social capital (Independent Variable)	Network Ties	Affected by the "amount of time, the emotional intensity, the intimacy...and the reciprocal services which characterize the tie." (Granovetter, 1973: p1360). It is argued that such ties are employed for purposive action, for example to alter others' opinions and attitudes, ultimately increasing the actor's influence in the community (Lin, 2002). .
Cognitive sources of social capital (Independent Variables)	Believability	The interaction of communications with consumer's attitudes. Linked to action; a message that is considered believable is more likely to prompt a reaction (Maloney, 1963; Beltramini and Evans, 1985).
	Information Value	Widely accepted as a significant source of economic and social advantage (Hirsleifer, 1971). An important dimension in the marketing context is the identification of sellers and the provision of specific information on their products (Stigler, 1961).
External factors (Mediation)	Forum Scepticism	Adapted from advertising literature where it is defined as 'the general tendency toward disbelief of advertising claims' (Obermiller and Spangenberg, 1998: p160).
Moderators	Susceptibility to Influence	Individuals differ in their responses to influence which "is distinct from the subjects' propensity to conform to group norms and focuses specifically on their likelihood to make decisions or modify their perceptions of a subject based on the opinions or evaluations of others." (Bearden, Netemeyer and Teel, 1989: p 473).
	Message Content	The over-riding theme of research in the area of the effect of message content on reader opinion and persuasiveness follows the Smith et al (1946) question: "who says what to whom and with what effect?"
Dependent variable	Influence (2 dimensions)	Lavidge and Steiner (1961) argued that if brand messages changed audience perceptions, these should be measured across three dimensions: cognition (thinking), conation (doing) and affect (feeling). This has been established as one of the more influential models of advertising effectiveness (Beard, 2002; Gresham et al, 1984) and is has been referred to as the "hierarchy of effects model" (Hunt, 1983: p11).

Sections 4.1 – 4.4 discuss the constructs in more detail, in each case initially focusing on the definition in the context of the present study. Second, each section discusses the relationship between the constructs, leading to the hypotheses.

4.1 Sources of Social Capital (Independent Variables)

The basis of the independent variables in the conceptual model are drawn from Nahapiet and Ghoshal's (1998) influential work in identifying the sources of social capital, which are outlined in Table 4.1. While Nahapiet and Ghosal were interested on the co-creation of intellectual capital between collaborating organisations, the sources are consistent irrespective of the outcome. They are considered to provide an appropriate framework within which to establish the present research, despite the focus on an alternative outcome (influence rather than intellectual capital). Each source has been operationalised using either single or a combination of related constructs and these are outlined in the following sections. It is natural in cases where the constructs are so closely inter-related that there is a degree of overlap, and the following sections aim to outline how these have been distinguished.

Table 4.2 – Operationalisation of Sources of Social Capital

	Source of social capital:	Operationalized in the present research as:	Operationalisation:	Limitations to Measurement:
Relational	• Norms • Obligations • Trust • Identification	• Conformity to Norms • Identification as a Credible Source	Conformity to norms infers the presence of trust and mutual obligations (Misztal, 1996). In the context of VCs, identification of oneself as a member is inferred. The theory is extended here as identification of oneself as a knowledgeable, credible source.	As argued in Chapter 2, there is a link between norms, the obligations that are related to reciprocity and the existence of trust. In this regard, the relational source is considered to be measured well. However, it is recognised that by capturing source credibility and knowledge, the identification dimension is imperfectly measured. While this may be justified in terms of the resources available for the study, this simplification is acknowledged in the limitations outlined in Chapter 8.
Structural	• Network ties • Configuration • Appropriable network	• Network ties	The presence of an appropriable network is inherent in the source of the data (VCs) which is configured around the forums. Network ties are separately measurable.	There is significant limitation to this measure which is due to the fact that the existence of ties cannot be observed and the study relies on self-reporting. Similarly, the configuration of the network ties can only be observed through the collection of weblog data from the participating communities. This is beyond the scope or possibilities of this type of study and findings are limited as a result.
Cognitive	• Shared language • Shared narratives	• Believability • Information Value	In the present research context, the ability to demonstrate domain knowledge through the use of specific language and codes are important elements of being believed, which is an established measure of communication effectiveness. Separately, Brown et al (2007) indicate that Information Value is a critical element to online WOM. Hence, for the present study, it was necessary to extend the cognitive sources to the constructs shown.	The collection of data indicating believability and information value go further than the source suggests in terms of shared language, which simply indicates the use of codes (perhaps jargon) that is specific to a community. However, to collect valid data indicating the presence of 'shared narratives' would require a longitudinal or more qualitative study which would allow the researcher to investigate the complex notion of narratives. This is beyond the scope of the present study and findings are limited as a result.

In each case, the construct will be defined initially and then its relationship with others is hypothesised and justified.

4.1.1 Conformity to Norms

Virtual communities develop group norms that are specific to the type of community and are policed by members (Wellman, 1999). Such norms are similar to those created in traditional, offline communities as described by Katz et al (1955).

Conformity to norms is an important way for individuals to establish themselves as a trusted member of a community. Further, it is asserted in a range of studies, outlined above, that such individuals are favoured sources of information, meaning that they are more likely to be consulted or listened to in an information search (Wellman, 1999). Therefore, the *perception* by readers that an author or post(s) conform to norms is an antecedent to the establishment of influence on the reader. It is this perception that is being measured in the present study.

The design of an online community website affects the type and nature of personal communication shared between members (Ren et al., 2007). Many sites' public profiles provide a reader with sufficient clues to perceive another member's conformity with the norms and expectations of the community (Keitzman et al, 2011). The ability for individuals to share personal stories and information increases the opportunity for them to develop a shared identity and explore similar opinions, tastes and beliefs (Ren et al, 2007).

Relationships with other constructs - Chapter 3 includes a thorough review of motivation to join and participate in a VC. These have been summarised by Ridings and Gefen (2004): (1) information search; (2) social support; (3) friendship development; and (4) recreation. Community participation has been strongly linked with social capital outcomes, for example: physical and psychological well-being; community and political participation; and higher levels of education (Steinfield et al, 2008; Valenzuela, 2009). In order to achieve these, a general conformity to norms is required as the foundation to reliable reciprocity (Wellman, 1999), which is a pre-requisite to the existence of community trust (Misztal, 1996). In this way, users

achieve two of the critical requirements for on-going membership: (1) information search and; (2) support (Ridings and Gefen, 2004).

The first hypotheses that stems from these important findings relates to the relationship between the *conformity to norms* by the sender of a message and the ability to identify oneself as a knowledgeable, credible member of the community.

Communities value conformity to norms but welcome disparate views and the debate that follows. However, certain negative behaviours can occur in online debate, for example 'flaming' where one user posts deliberately defamatory comments about another individual or their opinions. Different communities tolerate varying communication styles and tone in their forums and, in some cases, mild derision is considered an effective way for members to enforce norms (McLaughlin et al, 1995). However 'flaming' is generally considered to be a breach of norms (Kollock and Smith, 1994) resulting in depletion of trust in the community and of a reduction in the credibility of that member (Kling, 1996).

In summary, the inclusion of this hypothesised relationship is justified by three key arguments: first, that they are theoretically linked as being the two relational sources of social capital (Nahapiet and Ghoshal, 1998). Second, that sharing personal narrative, which suggests that the author of a post conforms to community practices, supports the notion that he or she should be considered a *potentially* valuable source (Katz et al, 1955; Ren et al, 2007). Finally, conformity to norms is a pre-requisite to reliable reciprocity and onwards to trust (Misztal, 1996); if information or favours are given by the receiver of a message (perhaps in as simplistic a form as 'liking' a post) then, the favour will be returned in time.

H_1: Conformity to norms increases identification.

It is interesting to note that there is a contextual element to such behaviour, meaning that an individual who shares identity (and therefore behaves in a certain way) in one VC may feel and act differently in another (Ashforth and Johnson, 2001; Brewer and Kramer, 1986). An obvious example of this is the variance in tone and style of posts and comments by many users between their LinkedIn and Facebook profiles,

where participation motivations, expected outcomes and community norms are very different.

Community norms are developed and policed by the community members themselves (Wellman, 1999). Research shows that members of communities who share bonds based on common interests tend to be more prone to modifying their behaviour to conform to group norms (Sassenberg, 2002; Postmes et al., 2001).

It was argued in Chapter 2 that conformity to norms is a pre-condition for the establishment of reliable reciprocity, which itself is an antecedent to trust (Misztal, 1996). Studies of the effectiveness of online recommendation systems have shown that trust is strongly linked to similarity between online users (Ziegler and Lausen, 2004). Further, that people are more likely to accept a recommendation from someone they know and trust (Sinha and Swearingen, 2001). In contrast, in experiments aimed at testing methods to stimulate community participation, Ludford et al (2004) found that the 'uniqueness condition' (referring to the user's contribution than themselves personally) was a stronger stimulus to increased sharing than the alternative condition where members were re-assured that they fitted in with the group.

These arguments support the inclusion of the second hypothesis, which argues for a relationship between a member's conformity to norms and the extent to which they are likely to modify claims or recommendations they make in order to make them believable to the other members of the community. If a member wishes to convince his 'friends' in Facebook and his 'connections' in LinkedIn of the veracity of a fact, different rules apply depending upon the author's interpretation of the variant norms in those particular communities (Ashforth and Johnson, 2001; Brewer and Kramer, 1986).

> ***H_2: Conformity to norms increases the likelihood that messages will be believable.***

4.1.2 Identification as a Credible Source

The second construct which makes up the relational source of social capital is the process of identification of the individual as a reliable community member or trusted source of information.

The focus here is on an individual's position with the wider VC, which is in common with the organizational behaviour literature where *identity* focuses on the person and *identification* refers to his or her position in a larger group (Sluss and Ashforth, 2007; Albert et al, 2000; Jetten et al, 2002). The identification of communities online often highlights significant commonalities among members, such as: occupation, hobbies, general interests and, importantly, common viewpoints on important matters (Kumar et al, 2001; Tantipahananandh et al, 2007).

It is argued that identifying oneself as a trusted source of information in such a community requires compliance with a number of community expectations: such a person would need to be considered credible and knowledgeable.

Source Credibility measures the respondents' perception of the communicator as part of their process of accepting the information and considers the "general evaluation of the affiliative relationship between the source and the receiver" (Berlo, 1969 p574). In early studies, sources of information were categorised by 'prestige': if this was rated 'high', authors were noted to have a generally greater effect upon the receipt of the information (Sharif, 1935; Lewis, 1941). The phenomenon has been studied in the context of consumer behaviour and the credibility of the source has been found to positively affect the price versus risk perception in subjects (Grewal et al, 1994).

Source credibility has been defined in a number of ways: from the very simple conceptualisation of it being 'believable' (Fogg, 1999; Birnbaum and Stegner, 1979); to a combination of trustworthiness and expertise or the perception of competence (Burgoon et al, 2000). Perhaps more comprehensively, Tseng and Fogg (1999) identify four types of source credibility: (1) *presumed credibility* is assumed by the reader from, for example, stereotypes; (2) *reputed credibility* is inferred by 'source labels', for example the title Dr or Professor or, perhaps, an online profile name or reputation score; (3) *surface credibility* arises where the receiver judges by

initial impressions of the sender, for example another VC member's profile or contribution statistics and: (4) *experienced credibility* is considered the most reliable measure and is based upon the receiver's personal experience of the sender.

It is argued that the perception of the credibility of a message source is closely related to the perception of his or her knowledge or expertise (Birnbaum and Stegner, 1979; Hung and Li, 2007).

Relationships with other constructs - In generating an understanding of the differences between the two terms, arguably the presence of skills in addition to knowledge distinguishes an individual as an expert (Chi et al, 1988). In the context of the present study, while skills cannot always be directly shown in written communications in VCs, it is possible to provide evidence that leads to the perception that they exist by reference in the post. For example, in defining 'consumer expertise', Alba and Hutchinson (1987) argue that the term has two dimensions: (1) *familiarity* as attested by the number of product experiences that have been accumulated by the customer and; (2) *expertise* which refers to the customer's "ability to perform product-related tasks successfully" (p411). Knowledge, as conceptualised in this way as a two-dimensional construct has been adopted in understanding consumer product choices (Mishra et al, 1993).

In summary, prior research has identified relationships between the variables, which make up the *Identification* and *Believability* constructs. Strong links between credibility of the source and the believability of the message have been reported (Berlo et al., 1969; Hung and Li, 2007). This may be partially explained by the argument that a credible source invites less counter-argument (Sternthal, 1978). Specifically, believability is enhanced by the prior actions of the author, which will have contributed to the author's reputation as a credible source (Sobel, 1985).

Further, Levin and Cross (2004) conceptualise credibility in terms of 'competence based trust' and argue that it is an important antecedent to the information being accepted and embedded by the receiver.

Expertise is thought to be primarily domain specific: the knowledge and skills shown by an individual in one subject are may not necessarily be easily translated to another

(Posner, 1988). Competence-based trust, which is defined as the confidence by the receiver of information that the sender has an appropriate level of knowledge that warrants their ability to influence others, is an important antecedent to effective knowledge sharing and that this is particularly true where knowledge is highly tacit, which, arguably may be the case in many specialist VCs (Levin and Cross, 2004).

H_3: Author Identification increases the likelihood that their message is believable.

While a credible, knowledgeable source does not necessarily improve the likelihood of the reader to acquire or retain new knowledge, he or she has been found to significantly and positively alter the perception of the information shared (Hovland and Weiss, 1951).

The initial opinion held by the receiver appears to be an important factor: where an initially negative opinion is held, the highly credible source is more persuasive but this effect is dissipated in the case where the initial opinion is neutral (Dean et al, 1977; Aronson et al, 1963). This may be explained by the theory of cognitive dissonance (Festinger, 1957) which suggests that: "when an individual finds that an opinion advocated by a credible communicator is discrepant from his own opinion he experiences dissonance…the greater the discrepancy, the greater the dissonance" (Festinger and Aronson, 1960: p32) causing the receiver to change his or her opinion to conform more closely to that of the sender.

Hovland and Weiss (1951) found that while "neither the acquisition or retention of factual information appears to be affected by the trustworthiness of the source…changes in opinion are significantly related to the source used in the communication." (p647). The 'sleeper effect' (Hovland et al, 1949) suggests that the receiver's opinion of information presented changes after a period of reflection. This effect is noted in opinion change depending on the nature of the source, where, after four weeks, the average change in opinion was not materially affected by the credibility of the source. This suggests that, while the effect of the prestige of the source has an effect on opinion-change, the effect is transitory, but in place at the

point an individual makes a decision to forward a post or to make a decision to act upon the content of the message, for example; to initiate a purchase-process.

Interestingly, in experiments that manipulated message framing, message order and source credibility, the latter was easily discounted unless presented as the final piece of evidence in an argument (Buda and Zhang, 2000). However, the authors themselves acknowledge that they expected different results had they used this factor as a focus of the study.

On balance, the idea that the perception of source credibility when considering a message received from another member of a community invites less argument (Sternthal et al, 1978) and is more likely to be considered to be of value (Hovland and Weiss, 1951) is convincing and has formed the basis of the next hypothesis.

H_4: Author Identification increases perception of information value.

Sternthal et al (1978) operationalized source credibility as trust (judged by their reputation) and the expertise exhibited by the source. Further, Sternthal et al (1978) suggest that the identification of the source as holding these credentials is critical in the stages prior to processing the information. This supports the conclusion that the cognitive processing of the message is affected by these two factors, leading to greater persuasiveness in the case that these conditions are met.

Those who are able to identify themselves as a credible and knowledgeable source of information are more likely to influence others to change their perceptions and to encourage them to pass along certain messages.

In a study of the economic advantages of long-term payment arrangements where contracts are deemed unnecessary due to the reputation of the creditor, Sobel (1985) found that the receiver's perception of the credibility of the sender of a message was based upon the judgement of the sender's previous actions. In the context of the present study, evidence that the sender is identifiable as a committed member of the community who conforms to its norms and expectations is readily available in his or her public profile and post history.

However, Bone (1995) found that in the context of WOM, the perceived product knowledge of the sender of the message was distinct from the perception of expertise and affected the overall perception of the product in different ways. While the terms 'knowledge' and 'expertise' are often used interchangeably, possibly the best way to conceptualise them is that expertise is underpinned by knowledge, or, at least the ability of the 'expert' to organise their knowledge (Minsky and Papert, 1974). For example, expert drivers have been found to be able to demonstrate knowledge of less well-known routes than novice ones (Chase, 1983). Berlo et al (1969) actually go further and argue that perceived knowledge (in the form of 'qualification') is actually a dimension of source credibility.

There is a common theme among the conclusions of those who have considered the role of source credibility in the development of opinion-leaders: the identification that the sender of the message has superior knowledge on a subject is a core element in his or her status as an opinion-leader (Katz and Lazarsfeld, 1955). This argument is supported by Keller and Berry (2003) in their profile of influential Americans and by Assael (1984) in his study of consumer behaviour. The role of 'market mavens' has been argued to be critical in the diffusion of products as they are identified primarily by their wide knowledge on a subject (Feick and Price, 1987).

H_{5a}: Author Identification increases the likelihood that a message could be passed along.

H_{5b}: Author Identification increases the likelihood of perception change among the readers of a message.

4.1.3 Network Ties

The context of Nahapiet and Ghoshal's (1998) theory specifically addresses the inter-firm, development of intellectual capital, which can be shared for the co-creation of knowledge. In such cases, within bounded environments, it is possible to consider the full range of ties and network relationships. Equally, an individual's position relative to network centrality and the hierarchies which exist within it are possible to conceptualise. However, in the case of large-scale VCs, such as the type within the context of the present research, this is not possible within a single study

nor is it practical given the number of members and the possible network permutations. Such analyses are better placed within SNA and, as outlined in Chapter 3, the focus of such studies does not answer the research question.

This being said, the existence of a relationship prior to the respondent viewing the evidence presented is an important antecedent to effective knowledge transfer (Levin and Cross, 2004) and decision making (Leonard-Barton, 1985) and has been operationalised in the present research in the following way.

The strength of a tie refers to the nature of the relationship between one member of a network and another; specifically in this context, it refers to the strength of the relationship between the poster and the readers. It is affected by the "amount of time, the emotional intensity, the intimacy...and the reciprocal services which characterize the tie." (Granovetter, 1973: p1360). It is argued that such ties are employed for purposive action, for example to alter others' opinions and attitudes, ultimately increasing the actor's influence in the community (Lin, 2002). .

According to Marsden and Campbell (1984) "a measure of 'closeness' or the emotional intensity of a relationship is on balance the best indicator of the concept of tie strength" (p498). Strength of ties in social networks has been used to predict the presence of offline relationships using the sentiment of messages between members (Gilbert and Karahalios, 2009). McPherson et al (2001) suggest that homophily is an important factor in the development of social ties of all types and, importantly, that relationships formed between individuals who are dissimilar "dissolve at a higher rate" (p415). However, certain dimensions of homophily (for example location versus gender) are more important than others in the development of ties (Yuan and Gay, 2006).

Relationships with other constructs - It is argued that a key factor in the development of opinion-leader status is the existence of embedded relationships held by certain individuals with others in their networks (Rogers, 1962; Dichter, 1966). Levin and Cross (2004) argue that the strength of a tie has a direct effect on the effective transfer of information between the sender and receiver. In her study of innovation adoption, Leonard-Barton (1981) argues that the primary reason for an individual to

purchase a new category of product was the number of that individual's friends who already owned the product. In a later study, Leonard-Barton argued that the existence of a strong tie between members of a group leads an individual to have a greater influence on decision making (Leonard-Barton, 1985).

The Internet generally, and more specifically VCs, are argued to be a relevant and accessible method of sustaining existing relationships and developing new ones (Penard and Poussing, 2010). However, such relationships are fluid and not all friends are equal; the strength of a connection falls anywhere along a continuum which ranges from trusted friend to total stranger (Gilbert and Karahalios, 2009). In the Pew Internet and American Life Survey Report on The Strength of Internet Ties (Pew, 2010), the authors refer to core and significant ties, distinguishing between those with whom users have a very close relationship and those with whom they have less frequent contact and are therefore less inclined to request information.

According to Johnson Brown and Reingen (1987), strong ties and those individuals with whom the individual perceived a homophilious relationship were more likely to be the primary and most influential sources of information. However, circumstances exist, for example where strong ties are predominantly offline and weak ties are within a bounded community, that this finding is falsified (Steffes and Burgee, 2008). However, the weight of evidence suggests strong ties to be more influential. In other words, the better one knows a network contact, the more likely one is to ask them for information. Where information requested is responded to positively, the information provider actively increases their social capital.

Using a model based upon the dimensions of Granovetter's definition of Gilbert and Karahalios (2009) claim 85% accuracy in predicting the strength of a tie. Broadly, the same dimensions are used as the basis for measuring this construct in the present study. Specifically these are: the duration, frequency and structural elements of the relationship as well as evidence of reciprocal support and sharing. It is not the intention to use the present study to attempt to predict the strength of the tie *per se*, but the existence of a strong tie is hypothesized to be an antecedent to influence and it is this construct under scrutiny in the present research.

In conclusion, a key factor in the establishment of opinion-leader status is the existence of a range of embedded relationships with individuals within a network (Rogers, 1962; Dichter, 1966). This idea has been linked with effective transfer of information (Levin and Cross (2004) and, most pertinently, with direct influence decision-making (Leonard-Barton, 1981).

It is with particular attention to the work of the latter author, that the seventh hypothesis is developed for both dimensions of the dependent variable.

> ***H_{6a}: A strong network tie increases the likelihood of the receiver to propagate a message further within the network.***
>
> ***H_{6b}: A strong network tie increases the likelihood of perception change.***

4.1.4 Believability

According to Nahapiet and Ghoshal (1998), these sources involve the exchange of messages using common language, interpretations, codes and meanings; they argue that these are a pre-condition to the process of "combination of information". In operationalizing this particular dimension, it is argued that, in order for the receiver of the information to be cognitively processed such that it can be combined, it must be *believed* and *considered to be of value*. The following two sections consider these constructs in turn.

In his study of consumers' responses to advertising, Maloney (1963) concluded that '*believability is not an inherent property of the advertisement itself*...Believability depends upon the *interaction* of each advertisement with the consumer's attitudes.' (p2). It is also linked to action; an advertisement that is considered completely unbelievable is unable to elicit a response, whereas one that is considered believable is more likely to prompt a reaction (Maloney, 1963; Beltramini and Evans, 1985). For this reason, believability has been linked with advertising effectiveness (Kamins et al, 1989).

Advertising believability has been tested in a number of contexts, including claims about product effectiveness (Beltramini and Evans, 1985), cigarette and alcohol warning labels (Beltramini, 1988; Andrews et al, 1990) and political advertising

(O'Cass, 2002). This has led to the conclusion that it 'shed[s] light on how or if consumers derive meaning from information in advertisements' (Atkins and Beltramini, 2007: p171).

This supports the argument that advertising is particularly effective if the claims build on the respondents' pre-existing beliefs or perceptions (Maloney, 1963). Assimilation-contrast theory suggests that a message is likely to be accepted as believable if it is perceived to be within a certain range of latitude from the initial belief position (Sherif, Sherif and Nebergall, 1965). If the content of the message is considered within the upper and lower limits of the range, the message is also considered to have a higher likelihood of changing the reader's attitude (Suter and Barton, 1996).

Research indicates that there are strong links between credibility of the source and the believability of the message (Berlo et al., 1969). Further, that the extent to which a message is considered believable by the reader contributes to the perception by the reader that the sender of the message is a credible source (Hung and Li, 2007). The respondents' belief that a message itself is believable is distinct from the perceived credibility of the source which focuses on the person rather than the post (O'Cass, 2002, Robinson and Kohut, 1988). However, in the case of VC interactions, the reputation, tenure and post-history are all available on the members' public profile.

Clearly, there are some differences in the context of the present study from the advertising research from which inspiration was drawn. However, in their study of the believability of the US press, Robinson and Kohut (1988) found that the majority of respondents believed what they read and they found this to be broadly similar across a range of demographic groups or technological sources leading them to conclude that 'technology…is *not* the hook upon which opinions hang' (p188).

In tests of the believability of advertising claims and their effects on brand awareness and purchase intentions, 'arousing', fast-paced commercials were noted to positively affect both measured outcomes (Yoon et al, 1998). Extrapolating those findings to a text-based medium, such as a post in a VC, is problematic, but may suggest that posts which contain some form of linguistic stimulus, such as humour, surprise or an

argumentative tone may stimulate the reader to more readily accept the content. Certainly, humour and surprise have been positively linked with the propensity for a message to 'go viral' (Dobele et al, 2007).

Relationships with other constructs - Personal recommendations have been found in studies to be the strongest source of information, from the provision of information on drug abuse (Dembo et al, 1974) to various studies relating to WOM (Day, 1971; Dichter, 1967). These have been found to be inherently more believable than institutionally prepared information, but clearly under scrutiny here is what factors make one individual more believable than another. According to Maloney (1963) there are three major issues: (1) the personal traits of the communicator are important; he refers to the Two-Step Flow (Katz & Lazarsfeld, 1954) agreeing that opinion-leaders hold the key; (2) disconfirmation of a pre-existing belief on the part of the receiver is important; the further the claim is away from the original perception, the less likely it is to be believed in a single communication; and (3) no single communication is likely to be completely believed in isolation. For advertising practitioners, the implications of these studies are that consistent messages and tone, repeated as widely as possible increase the likelihood of a successful advertising campaign.

It is unclear whether the same strategy would work in the case of individual posters in a VC, but certainly research into the believability of characters and interaction in virtual worlds would suggest that presentation, interaction and immersion in the world are key factors (Magnenat-Thalmann et al, 2005). The idea of consistent repetition of an unbelievable message has been found to increase its believability and this, in turn has been suggested to stimulate cognitive elaboration processes (Gibbons et al, 2010) which is linked to persuasion (Petty and Caccioppo, 1982).

However, the content and nature of the message itself undoubtedly affects its believability: categorical statements of opinion have been found to be more believable than conditional ones, unless the latter is supported by an incontrovertible fact which is considered to be inconsistent (Hasson and Johnson-Laird, 2003).

Different techniques may be used to create the perception that a message is believable, but irrespective of that, it is the perception itself that is being tested in this context. The method used to measure the construct is consistent with tests initiated by Beltramini and colleagues in the 1980's onwards for believability of a range of messages.

By nature, a message that is disbelieved is unlikely to contain information that is considered valuable. This statement prompted consideration of whether the constructs were conceptually distinct, but sufficient evidence exists to support their inclusion separately, which is outlined in Section 4.4.1. This can be summarised as: not all believable messages are valuable, but to be considered valuable, they must be believable.

There is an interaction between the credibility of the source and the believability of the message (Berlo et al, 1969; Hung and Lee, 2007), which must be accounted for in the data analysis. Further support of the inclusion of this hypothesis is supported by Maloney (1963): "Believability depends on the interaction…with the consumer's attitudes" (p2); in other words, this may affect the extent to which he or she perceives value.

> ***H_7: If a message is considered believable, the reader is more likely to consider the information contained in it to be valuable.***

4.1.5 Information Value

Information has widely been accepted as a significant source of economic and social advantage (Hirsleifer, 1971). An important dimension in the marketing context is the identification of sellers and the provision of specific information on their products (Stigler, 1961). A range of attributes of information are considered significant: (1) the extent to which it resolves uncertainly (2) its ease of distribution; (3) the extent to which it can be applied by the receiver; (4) the nature of the content and; (5) the relevance to any decisions to be made by the receiver (Hirshleifer, 1973). Arguably, the design of modern virtual communities of interest facilitates the ease of message distribution and all messages have a theoretically equal chance of being diffused. However, it is only through the actions of the author of a post that

a particular message is differentiated in terms of the value perceived by its readership and it is through the exchange of valuable information that social capital is 'coevolved' (Nahapiet and Ghoshal, 1998).

Evans and Wurster (1997) predicted the end of information channels (where information can only reach a limited audience) and also of the hierarchies which are created in the process of passing information through channels. They predicted that the economics of information would be dramatically changed by what they termed 'hyperarchies' such as the World Wide Web, intranets and distributed organisations made up of virtual teams. While they correctly predicted that this phenomenon would radically alter firms and the way they operated, they underestimated the extent of the shift in the power between consumers and firms. However, Evans and Wurster (1999) later suggested that a range of 'rich' information could be widely shared by both individual consumers and by firms through the internet and predicted a shift in the power balance that is more recognizable in modern times.

Today, the Internet is considered an important source of information on products, brands and services (Dutton, Helsper and Gerber, 2011). In particular, online discussion forums are considered to be a valuable resource for marketers to communicate and develop relationships with consumers (Pitta and Fowler, 2005; De Valck, 2010).

Economists have described informative advertising as being that which "provides full and truthful information about the product it promoted" (Grossman and Shapiro, 1984: p 63) or which "provides direct information about the characteristics of the brand" (Nelson, 1974). The marketing definition is arguably more outcome oriented: "in order for a commercial to be considered informative, it must permit a typical viewer to make a more intelligent buying decision after seeing the commercial than before seeing it" (Resnik and Stern, 1977 p50). Informative advertising has been positively linked with a brand's ability to differentiate products (von der Fehr and Stevik, 1998) and to endow them with a perception of prestige (Ackerberg, 2001). This is important to brands as, where information on a product is imperfect; consumers are argued to rely more heavily on price comparisons in order to make purchase decisions (Tellis and Gaeth, 1990).

Relationships with other constructs - Irrespective of their disciplinary background, theorists tend to agree that informational advertising is persuasive (Nelson, 1974; Resnik and Stern, 1977; Ackerberg, 2001). Where the subject of the message is of value to the receiver, the perceived factual quality of the message is noted to be of primary importance in its persuasiveness; where the converse is true, the perceived quality of the source was the more important factor (Petty et al, 1981). Product involvement has been found in other studies to be of primary importance in the way messages are received by consumers and the extent to which they place value on the information leading to changes in the relationship and perception of the brand (Chen and Leu, 2011).

According to Hauser et al (1993), the valence of the message affects the perception of value: in the case where the message is positive, value is judged to be the expected utility of the consideration set; where the message is negative, its role in avoiding a potentially erroneous decision is considered to be the utility.

Relating specifically to WOM, the presence of a perception of information value is hypothesized to be the key antecedent to the likelihood by the receiver to diffuse the message further (Brown, Broderick and Lee, 2007) and is considered to be critical to the development of communities online (Reingold, 2000). Further, the three main criteria for the evaluation of online WOM should be frequency, volume and 'informativeness' (Cruz and Fill, 2008; Herr, Kardes and Kim, 1991).

The way consumers present themselves in a digital space is thought to be an important element in the choice of which messages or content to pass-along and that 'digital association' is an important factor in constructing a digital-self (Schau and Gilly, 2003). Therefore the value of the information contained in a message is a key element in the way the information is processed and in the decision to propagate the message further. This conclusion appears to be supported by a recent study where the exchange of information appears to be a key driver in the development of influence, measured as the likelihood that a message is passed along: "influence is not gained spontaneously or accidentally, but through concerted effort. In order to gain and maintain influence, users need to keep great personal involvement." (Cha, 2010: p18).

Literature from a number of distinct fields is unified in the conclusion that leads to the development of the next hypotheses: the greater the value in information shared, the more likely it is to communicate effectively. These are discussed in greater detail in Section 4.4.2, but the most pertinent works are highlighted here for clarity.

The transfer of information is central to Nahapiet and Ghoshal's (1998) conception of the co-evolution of social and intellectual capitals. Similarly, the transfer of information is the primary source of gratification of members of VCs (Ridings and Geffen, 2004). In general, the Internet, and specifically discussion forums, are important sources of information on which people make decisions about product or service purchases (Dutton, Helsper and Gerber, 2011; Pitta and Fowler; 2005). Promotional messages containing an informational element are considered to be persuasive and the recommendation to practitioners is to increase the value of information in order to improve efficacy (Ackerberg, 2001).

H_{8a}: Information that is perceived to be valuable is more likely to prompt the receiver to propagate the message further.

H_{8b}: Information that is perceived to be valuable is more likely to affect the receiver's perception of the subject.

4.2 External Factors

The previous sections describe and justify the inclusion of the primary constructs in the conceptual model as part of the present study. However, as indicated in the Chapter 3, there are a number of additional factors, which may be important in the establishment of influence in VCs. Further, it is hypothesised later in this chapter, that these factors may affect the relationships between the primary constructs. It is important to take these into consideration when testing the model.

4.2.1 Forum Scepticism

Advertising Scepticism is defined as 'the general tendency toward disbelief of advertising claims' (Obermiller and Spangenberg, 1998: p160) and has been considered a core element in the measurement of the effectiveness of the medium since the 1990's. The scope of the construct is limited to the extent to which the respondent is prone to believe the advertisement and is thus separate from the

respondents' general attitude towards advertising. Obermiller and Spangenberg's (1998) resulting scale was tested and found to be "internally consistent with a stable unidimensional factor structure across several samples with dissimilar participant characteristics" (p182). It is considered to be an important element in establishing consumers' general perceptions of VCs and the relationship with the value of the information contained within it and amended the scale in order to make it valid in this context.

In establishing the appropriateness of the adaptation of this element to the context of VCs, three factors needed to be taken into consideration. First, advertising is a non-personal form of communication and, while many posts in Internet forums may be specifically addressed to another member, for the majority of readers of public posts, they are non-personal and in this way conform to this categorisation. Second, Obermiller and Spangenberg (1998) contended that the aim of all advertising, "generally and ultimately is to persuade people to buy the advertised product" (p164). This clearly is not the case with posts in VCs. However, this argument can be elaborated subtly by proposing that advertising, along with a significant proportion of instrumental posts within many VCs, has the ultimate aim of persuading people of an argument: an opinion on product; a political perspective or; a general piece of advice. Third, the existence of consumer persuasion knowledge, which is defined as "a set of a priori beliefs and expectations" (p163) and situational factors such as product type and execution are considered key factors which are related to, but conceptually distinct from scepticism and therefore not included in their scale. This argument applies equally to VCs and it is considered an important element to measure in the present study.

The extent to which a community member considers the medium generally to be a valuable source of information is an important factor. Further, this construct is relevant in establishing the effectiveness of the medium for brands to communicate (either directly or via other members) with consumers. This element is considered a core part of understanding the effectiveness of advertising (Obermiller and Spangenberg, 1998) and it is included here on the basis that it should be similarly treated when testing communications in relation to VCs.

The proposition that underlies the hypothesis is that if one is pre-disposed to consider VCs to be a potentially good source of information and is then exposed to messages within a VC, which one considers to be believable, then the information is more likely to be considered of value.

H_9 – Believability partially mediates the relationship between forum scepticism and information value.

It should be noted that while the model suggests that other mediated relationships exist in the model, not all of them is to be individually tested. The reason for this is twofold: firstly, the aim is to establish the role believability plays in convincing sceptics that the VC is a valuable place to identify useful information and is the focus of the mediated relationship. Secondly, the model contains mediated relationships which are considered to be intuitive and well established.

4.3 Moderators

4.3.1 Susceptibility to Influence

In simulations of message progression through electronic networks, Watts and Dodds (2007) identified the top 10% of influential members of an experimental community. While the Influentials were the instigators of a greater number of cascades, these did not necessarily cause a change in diffusion patterns, which would be expected in traditional Influentials theory (Katz and Lazarsfeld, 1955). Only exceptionally was the Influentials hypothesis supported but, further, in homogenous networks, such as special-interest communities where members may share a number of interests and characteristics, Influentials suggested no difference in cascade patterns than other members (Watts and Dodds, 2007) leading to the initial conclusion that they "are less important than is generally supposed" (p453). In a separate article, one of the authors appears to have made the conclusion more concrete, arguing that the critical factor was the community's susceptibility to influence rather than the instigators' capability to persuade (Watts, 2007).

Consumer susceptibility to interpersonal influence is consistent with McGuire's (1968) ideas of influencability and with early findings (Janis 1954). This suggests that individuals differ in their responses to social influence and "is distinct from the

subjects' propensity to conform to group norms and focuses specifically on their likelihood to make decisions or modify their perceptions of a subject based on the opinions or evaluations of others." (Bearden, Netemeyer and Teel, 1989: p 473).

In the context of the present research study, primary interest is in the role of 'informational influence' which suggests that information from another is taken as reality by the receiver (Deutsch and Gerard, 1955). However, the susceptibility to influence construct is acknowledged to be multi-dimensional and includes 'normative influence', meaning the extent to which the subject feels the need to meet others' expectations (Burnkrant and Cousineau, 1975). This is either by establishing 'value expressiveness' defined as self-esteem in relation to a reference group (Bearden and Etzel, 1982) or through 'utilitarian influence' where compliance is desirable in order to gain rewards or avoid punishment (Burnkrant and Cousineau, 1975). Both the normative and informational dimensions of the construct were measured. As outlined in Chapter 3, the debate between Social Network Analysts on the importance of the role of opinion leaders in social media is polarised. On one hand, Watts and Dobbs (2007) reject the 'Influentials hypothesis' (Watts, 2007: p12) suggesting that the only important factor is the number of people a sender of a message has access to. On the other, in debunking the 'million follower fallacy', Cha et al (2010) argue that other factors, particularly related the information shared, are more important. The latter argument is supported by studies from both the SNA (Lascovec et al, 2011) and qualitative schools (Brown et al, 2007). The inclusion of the susceptibility to influence scale was included with the intention of informing this debate and testing the interaction between susceptibility and information value. This leads to the final hypotheses.

> ***H_{10a}: Susceptibility to Influence moderates the relationship between Information Value and their intention to propagate the message further, with more highly susceptible respondents being more likely to pass along.***
>
> ***H_{10b}: Susceptibility to Influence moderates the relationship between Information Value and their perception of the subject of the message, with more highly susceptible respondents being more likely to have their perception affected.***

4.3.2 Message content

The perception of the content of a message passed either from a brand to a consumer or from one person to another has been the subject of scholarly interest since the 1950's, much of which focuses on the persuasiveness of the message and the likelihood of its diffusion through word-of-mouth. The over-riding theme of this research follows the Smith et al (1946) question: "who says what to whom and with what effect?"

According to Perloff (2003), three primary factors affect the persuasiveness of an individual message: the extent to which it (1) presents both sides of the argument; (2) substantiates the claims and; (3) contains direct and powerful language. Perloff (2003) does not offer a prescription for a persuasive message *per se,* although the reader is left with the clear view that a well justified argument, which acknowledges alternative perspectives but is written with clear, unequivocal language is considered to have a greater chance of persuading.

A number of models of persuasion support this theme: Hovland et al's (1953) cognitive response model advocates the importance of Independent Variables (source, message, recipient, and channel); Internal Mediating Processes (attention, comprehension, yielding, and retention) and Consequent Communication Effects (belief change, attitude change, behaviour change). A number of this type of model was developed (Brock, 1967; Greenwald, 1968; Petty, Ostrom & Brock, 1981; Perloff and Brock, 1980) which focused on the cognitive responses, for example pro- and counter-argumentation and thoughts that surround a message. However, these were criticised for not being able to "shed light on the ways that messages influence people" (Perloff, 2003: p128).

The introduction of dual process models attempted to resolve this limitation (Petty and Cacioppo, 1986; Chaiken, 1980). The Elaboration Likelihood Model (ELM) focuses on the conditions for a message to be: attended to, supplemented, retained and – possibly – shared (Petty and Cacioppo, 1986; Petty and Wegener, 1999). The ELM argues that a message may be cognitively processed either centrally (meaning the reader focuses on and gives consideration to the content) or peripherally (where

processing attends to physical appeal, writing style or other cues in the communication).

Peripheral processing relies on heuristics (for example, 'experts are always believable' or 'my professor is always right'), which may be temporary or easily challenged (Olson and Zanna, 1993). Central processing tends to be associated with involvement with the subject of the message; if it is directly relevant or impactful to the reader's own life, it is more likely they will attend to it (Perloff, 2003).

Similar linear process models exist that are specific for marketing: the model for Defining Advertising Goals for Measured Advertising Results (DAGMAR) (Colley, 1961) and Awareness – Interest – Decision – Action (AIDA) model which was credited to E St Elmo Lewis in 1898 (Ferrell and Hartline, 2005). They both assume the subject progresses from becoming aware of the brand, product or service on offer through to action, which, in an ideal sense is purchase and both assume that the processing of the message is cognitive.

These are the basis of the model for measuring advertising effectiveness in the past 50 years. However, these models are argued to be flawed in the sense that they underestimate the effect of low attention (or peripheral) processing (Heath and Feldwick, 2008). The basis of that argument is that peripheral processing creates 'implicit memory' (Eysenck and Keane, 2000) which is free from conscious recollection and includes stores of perceptions and concepts. To paraphrase their argument: messages which contain perceptual cues are as likely as those which are direct and informational to change perceptions or attitudes.

However, the Heath and Nairn (2005) work is focused on advertising where visual cues and emotional prompts are common in promotional messages, whereas the context of the present study allows users to only use narrative arguments to make their case. This tends to lead to the conclusion that informational messages may be more powerful in this context.

While it is argued that in the advertising sphere, the role of peripheral or low-attention processing is underestimated (Heath, 2008), the argument that direct, unequivocal, justified narrative argumentation is likely to be considered valuable

(Perloff, 2003) is difficult to discount. This is especially true in the context of the present study where persuaders cannot rely on graphics or other images to help provide visual or emotional cues. This leads to the following hypothesis:

> ***H_{11a}: The content of the post moderates the relationship between Information Value and the conative dimension, with informational posts being more likely to prompt pass-along behaviour.***
>
> ***H_{11b}: The content of the post moderates the relationship between Information Value and the cognitive dimension, with informational posts being more likely to change the readers' perception of the subject.***

4.4 Measuring Influence

In Chapter 2, the 'Two Step Flow of Communications Model' was outlined as the theoretical basis for measuring influence in the present study: opinion-leaders "actively influence and support most of an individual's opinion, attitudes and actions" (Katz & Lazarsfeld, 1954 p48). Measuring the constructs and their respective relationships will provide a robust and generalisable predictor of the existence of influence in the VCs. An exhaustive search of the literature has not been able uncover evidence of personal influence being measured in a suitable way to answer the RQ in the present study. This is to be expected, given that this is an important, yet under-researched topic.

Conversely, marketing scholars have measured the efficacy (or influence) of advertising for over half a century. Lavidge and Steiner (1961) proposed that if brand messages changed audience perceptions, these should be measured across three dimensions: cognition (thinking), conation (doing) and affect (feeling). This has been established as one of the more influential models of advertising effectiveness (Beard, 2002; Gresham et al, 1984) and is has been referred to as the "hierarchy of effects model" (Hunt, 1983: p11).

In the advertising context, the conative effect refers to the decision to act in the sense of purchase. However, in the present study where the messages under consideration are not promotional messages and have no 'call to action', the conative dimension is used to refer to the decision to forward the message and contribute to its viral

progression. The conative dimension is used in the same way described by Lavidge and Steiner (1961).

The assumptions that underpin hierarchical models in general have been criticised as being unfounded: first, that consumers are assumed to move sequentially from one dimension to another (Copland, 1963; Schultz, 1996) and; second, that the direction of movement is one-way (Palda, 1966). These critiques are acknowledged but the weight of evidence in this and other hierarchical models suggests that the relationship between the constructs is an important element of the overall model. Further, given the context of the study, it is appropriate to focus on the two dimensions which answer the RQ, which are: the intention to propagate the message further (conative) and the extent to which the perception of the subject has been changed as a result of the message itself (cognitive).

The following sections discuss the expected direct and indirect relationships between the constructs, leading to hypotheses supporting each path. However, one final hypothesis is required to completely answer the research question; this tackles the question of how the two dimensions of influence are related.

The 'Viral Effect' describes the phenomenon of messages being passed through a community, sometimes a great speed. It has its roots in the 'Small World' experiments conducted by Stanley Milgram (1967), which investigated the idea that messages or memes can pass through global, personal connections like a virus. The use of 'contagion' as a design principle has been adopted by designers of computer systems and online communities (Kleinberg, 2008).

First use of the term 'Viral Marketing' (VM) has been related to the methods used by Microsoft, Inc. to launch the Hotmail® email service (Jurvetson and Draper, 1997). Of course, the Hotmail case relied on the use of email as the primary communication mechanism (Porter and Golan, 2006) but the advent of Web 2.0, which is characterised by the introduction of peer-to-peer communications and where communities become an important place for brands to engage with consumers (Cova and White, 2010) has changed the nature and opportunity for the viral effect.

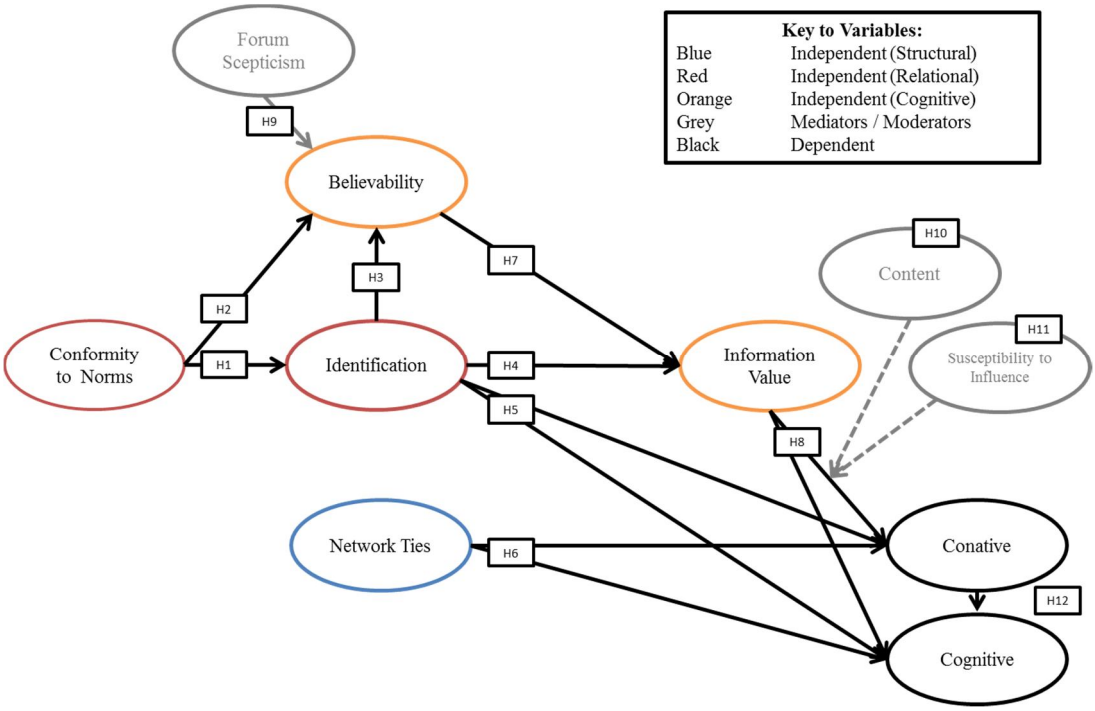
While video sharing in such sites as YouTube are the most famous examples of viral marketing, special interest forums are important communities for meme progression (Porter, 2004). Access to information is a key reason for individuals to join a virtual community (VC) (Wellman et al,, 1996), meaning that members may therefore be susceptible to appropriately placed content by brands (Godes and Mayzlin, 2009).

Social media outlets have become important channels for marketers, leading to the development of specific techniques to exploit the opportunities it presents (Wilson, 2005; Scott, 2007). There is one key theme to both academic theory and practitioner advice on viral marketing and, indeed, social media strategy more generally: the progression of an idea through and across viral communities can be inferred to have created a perception change along the way (Wilson, 2005; Kirby and Marsden, 2006; Subramani and Rajagopalan, 2003; Dobelle et al, 2005) and there is readily-available anecdotal evidence to suggest that the effect is the same if the valence of the message is negative (Ranjan, 2010). This notion leads to the final hypothesis:

> ***H_{12}: Viral progression is positively correlated to the presence of perception change.***

4.5 Conceptual Model

Figure 4.2 – Conceptual Model



5 Methodology

The choice of research approach, strategy and design should be driven by the researcher's philosophical stance (Bryman, 2008). The purpose of this chapter is to outline how these factors have affected the design of the present research. In the first section, various research paradigms are explored and aligned to epistemological and ontological positions. In the next section, the approach to the present research including the strategy, design and methodological matters are discussed. In the final section, the specific methods of the studies are established, demonstrating consistency with the broad approaches and philosophical position.

5.1 Paradigms in Social Science Research

This section outlines the various research paradigms that have been considered when designing the research and explores their associations with epistemological and ontological positions. According to Arndt (1985) "paradigms are not theories, but form the *foundation* of theories" (p11) and, historically in marketing research the focus has been on "rationality, objectivity and measurement" (p11). The purpose of paradigms is to ensure that research is carried out against accepted norms and procedures, ensuring consistency (Kuhn, 1962).

5.1.1 Interpretivism

The core principle of interpretivism is that reality is socially constructed and cannot be objectively measured: "it respects the differences between people and the objects of the natural sciences and therefore requires the social scientist to grasp the subjective meaning of social action" (Bryman, 2008: p16).

Phenomena exist only when studied and, in the interpretivist paradigm, there is no intent to seek an objective representation of that which is observed (Mir and Watson, 2001). Researchers use complex personal filters, such as previous research experience, beliefs and values, to analyse data (Kuhn, 1962). As such, evidence is subjected to different researchers' personal meanings and alternative conclusions may be reached. The paradigm was introduced as a reaction to the adoption of positivistic approaches in social sciences (Easterby-Smith et al, 2002).

The interpretive school of thought is predominantly found in three specific areas of research: firstly phenomenology which is founded in Weberian philosophy and

acknowledges the role played by subjective interpretation in scientific discovery. Secondly, hermeneutics utilises interpretivism to understand texts of a literary, religious or historical nature. Third, ethnomethodology is the interpretivist observation of humans in their individual settings (Lee, 1991).

The interpretivist paradigm is not suitable for research of this nature where an objective observation of perceptions is required in order to adequately address the research questions.

5.1.2 Critical Theory

Critical Theory describes approaches that are based on critique and in this context is regarded as a critical examination of society and the way humans interact. In common with interpretivism, critical theorists offer conclusions which are value-dependent as they are the result of subjective consideration (Guba and Lincoln, 1994). Critical theory is considered to be a form of hermeneutics where knowledge is gained by interpretation of human texts and symbols. This involves a normative dimension which aims to change society (Habermas, 1968).

Given the transformative objectives of the paradigm it is suited to action research where the researcher uses the power of reflexivity to change the observed phenomenon. It is not appropriate for the type of study where perceptions are being observed and where there is no intent to transform (Guba and Lincoln, 1994, p112).

5.1.3 Critical Realism

Critical realism, sometimes referred to as post-positivism, was proposed as an alternative to the adoption of positivistic approaches in social science (Bhaskar, 1975). The theoretical basis is that the world is too complex for humans to fully understand or describe (Cook and Campbell, 1979). It offers a systematic approach to explore phenomena and challenges the argument that reality is socially constructed aiming instead to uncover 'reality' (Cook and Campbell, 1979).

According to Bhaskar (1975) "science aims to discover structures and mechanisms underlying observable processes in the world; causality is to be analysed in terms of the tendencies of things rather than the conjunction of events or phenomena" (p28). Critical realism also offers a solution to the challenge presented in positivistic

investigation to emulate closed systems where cause and effect are constant. It is argued that open systems (such as society) are subject to many outside influences which cause variations (Bhaskar, 1975). Others argue that; even in experimental conditions, where phenomena are replicated in a laboratory situation, the closed systems required by positivism cannot be replicated (Steinmetz, 1998).

According to Tsang and Kwan (2001) there are three key elements to critical realism: first, scientific theory aims to record structures and mechanisms rather than empirical events. Second, such structures and mechanisms are only contingently related to observable events. Finally, knowledge of social reality is always imperfect, but it is still possible to create knowledge through creative construction and critical testing of theories.

Marketing research was originally founded upon a descriptive, qualitative approach and embraced more rigorous methodologies governed by quantification in the 1950's and 1960's. However, some call for a more open approach which benefits from both schools of thought, leading some to favour critical realism (Easton, 2001).

However, while there are clear benefits to critical realism, it is not appropriate for this particular type of study as the aim is to measure and describe the inter-relationships between complex constructs in an objective fashion, minimising the opportunities for researcher bias offered by subjective analysis.

5.1.4 Positivism

Positivism is primarily rooted in the physical sciences is based on the notion that: (i) the world exists externally; (ii) it can be measured by objective means; and (iii) is therefore value-free (Bryman, 2008). This relies on 'the constant conjunction orthodoxy' which means that the component parts of reality interact in a consistent fashion (Ramsay, 1998).

There are five core assumptions which must be fulfilled in order to conduct positivistic research in the social sciences: (1) the ontological assumption that external reality can be broken down into component parts which can be measured independently; (2) the epistemological assumption that the observer can be separated from the observed; (3) the assumption of "temporal and contextual independence of

observations" (p28) meaning that correctly identified samples will replicate previous findings; (4) the assumption of linear causality meaning that for every effect there exists a cause (and vice versa); and (5) the axiomatic assumption, which is that the observations are free from influence of any value system (Lincoln and Guba, 1985).

Extending this argument, particularly in relation to constant causality, positivism relies on the existence of 'closed systems' where each effect is the result of the same cause and only that cause (Bhaskar, 1975). The role of theory in the positivistic epistemological position is that it may be used to generate hypotheses which can be tested in order to deductively establish and explain laws which can be applied generally (Bryman, 2008).

Criticisms of the positivist approach, particularly in marketing research, have suggested that Lincoln and Guba's (1985) five core assumptions cannot be adequately met, leading to dogmatism but the others argue that the pursuit of objective truth in marketing research is logical and realisable (Hunt, 1990).

The aim of the present research is to establish relationships and causality between component parts of the phenomenon of online influence. Therefore, the positivistic approach is the most effective paradigm from which to establish the research approach and address the methodological challenges.

5.1.5 Paradigm Summary

Table 5.1 summarises the relationship between research paradigms and ontological, epistemological and methodological perspectives.

Table 5.1 – Paradigms in Management Research

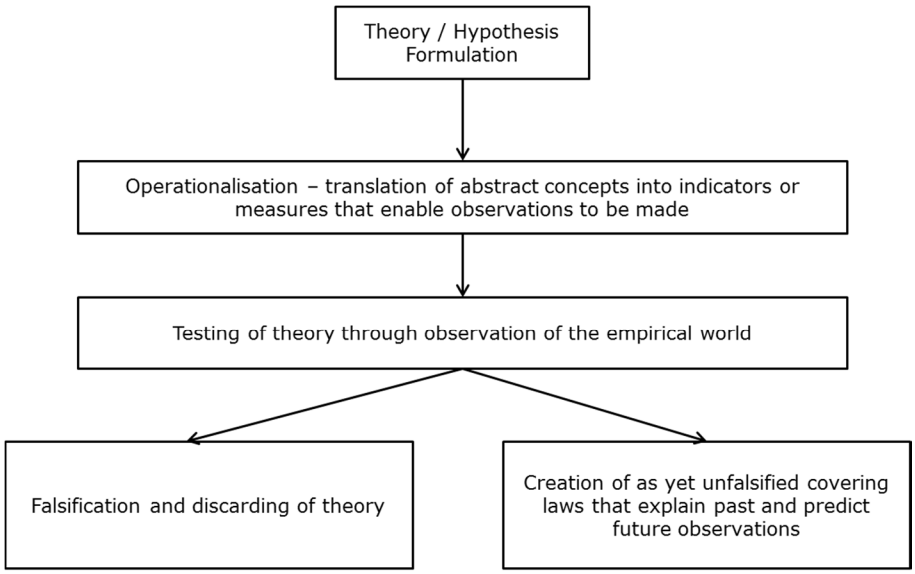
	Research Paradigms			
	Positivism	**Post-Positivism**	**Critical Theory**	**Interpretivism**
Ontology	Naïve realism – "real" reality but apprehensible	Critical Realism - "real" reality but only imperfectly and probabilistically apprehendible	Historical Realism – virtual reality is shaped by social, political, cultural, economic, ethnic and gender values. Crystallised over time.	Relativism – local and specifically constructed realities.
Epistemology	Dualist / Objectivist. Suggests the separation of researcher and the subject. Aims to ensure observations are value-free. Findings true.	Modified dualist/ objectivist. Critical tradition / community. Findings probably true.	Transactional / subjectivist. Findings are value mediated.	Transactional / subjectivist. Created findings.
Methodology	Experiment, Statistics, Survey, Simulation Aims to verify hypotheses. Primarily quantitative.	Modified experimental / manipulative; critical multiplism; falsification of hypotheses. May include qualitative.	Dialogic / Dialectical E.g. Action Research Feminist Studies Case Study	Hermeneutical / Dialectical E.g. Ethnography Grounded Theory Phenomenological Research Case Study

(Adapted from Guba and Lincoln, p256 in Denzin and Lincoln, 1998)

5.2 Research Approach

There are two broad approaches to the development of research: inductive and deductive. The researcher has taken a deductive approach to the present research: a review of literature helped to develop a set of hypotheses which were then subject to empirical study (Bryman, 2008).

Figure 5.1- Guide to the Research Development



Adapted from Gill and Johnson (2002)

This section outlines this approach in more detail and explores their impacts on the present research.

5.2.1 Research Aims

As outlined in the previous section, the present study has been designed from a positivistic standpoint, taking note of the central tenets as outlined below.

Table 5.2 - Core Elements of Positivistic Research

Aim of research:	
Generation of causal laws	The aim of the research should be to identify causal explanations and fundamental laws that explain regularities in human social behaviour. The present research focuses on the potential causes of a post to be influential in an online community.
Research Approach:	
Unity of natural and social science method	The method of the natural sciences is the only rational source of knowledge and should therefore be adopted in the social sciences. This implies preoccupations with: Internal validity, External Validity, Reliability and Operationalisation. Previous studies where reliable results have been demonstrated were utilised to develop a view of influence in VCs.
Relationship of research with researched:	
Independence theory and natural observational language	The observer is independent from what is being observed; therefore the observer can stand back and observe the world objectively. The present research has been designed for the researcher to observe the behaviour and perceptions of the respondents.
Value Freedom	The choice of what is to be studied and how to study it can be determined by objective criteria rather than by human beliefs and interests. In this case, these have been drawn from literature and supplemented with views and opinions of experts in the area of study.
Correspondence theory of truth	Theory can be tested against irreducible statements of observation. Research is concerned with producing accounts that correspond to an independent reality. The conceptual model and its corresponding hypotheses have been designed to be testable using appropriate techniques.

Adapted from Johnson and Duberley (2000).

5.2.2 Research Strategy

There is a conventional wisdom that certain research paradigms are principally linked with certain methodological choices: "… the quantitative paradigm is said to have a positivistic, hypothetico-deductive, particularistic, objective, outcome-oriented, and natural science world view. In contrast, the qualitative paradigm is said to subscribe to a phenomenological, inductive, holistic, subjective, process-oriented and social anthropological world view" (Reichardt and Cook, 1979: p9-10).

The following table, taken from Bryman (2008) outlines these relationships in an operational sense, which have influenced the design of the research study.

Table 5.3- Summary of Research Strategies

	Qualitative	**Quantitative**
Principal orientation to the role of theory in relation to research	Inductive – generation of theory	Deductive – testing of theory
Epistemological orientation	Interpretivism	Natural science model in particular positivism
Ontological orientation	Constructivism	Objectivism

Bryman (2008: p22)

In addition to these specific methods, researchers have the option to adopt a mixed methods approach. In considering the use of mixed methods, it is advisable to consider two elements: priority, which asks whether qualitative or quantitative methods are the principal data-gathering tool and sequence, which asks in which order the methods are used (Morgan, 1998).

Research into the antecedents to influence in online communities is a relatively new and under-researched topic. As such there was a need for preliminary investigation into the validity of certain constructs and their possible relationships with the dependent variable in order that a conceptual model could be developed and tested.

It was clear, then, that a range of techniques would be necessary to effectively execute the research strategy.

The initial conceptual model was developed from a broad review of the literature and appropriate constructs were identified. As shown in Table 5.1, a series of pilot tests were run in order to pre-test the validity of the constructs and to ensure that the conceptual models for each research question are grounded in reality as well as being consistent with theory.

A mixed methods approach was chosen and the priority was quantitative data analysis using the collection of data from a self-completion online survey. As a result of the complex nature of the relationships and the necessary investigation of latent variables, data was collected with the aim of interrogating the multiple relationships between both the observed and latent variables.

The chosen methods, along with justification of their inclusion and indication of the order in which they were conducted, are outlined below. The details of the procedure for each element of the study are explored in more detail in the reports of each study in this document.

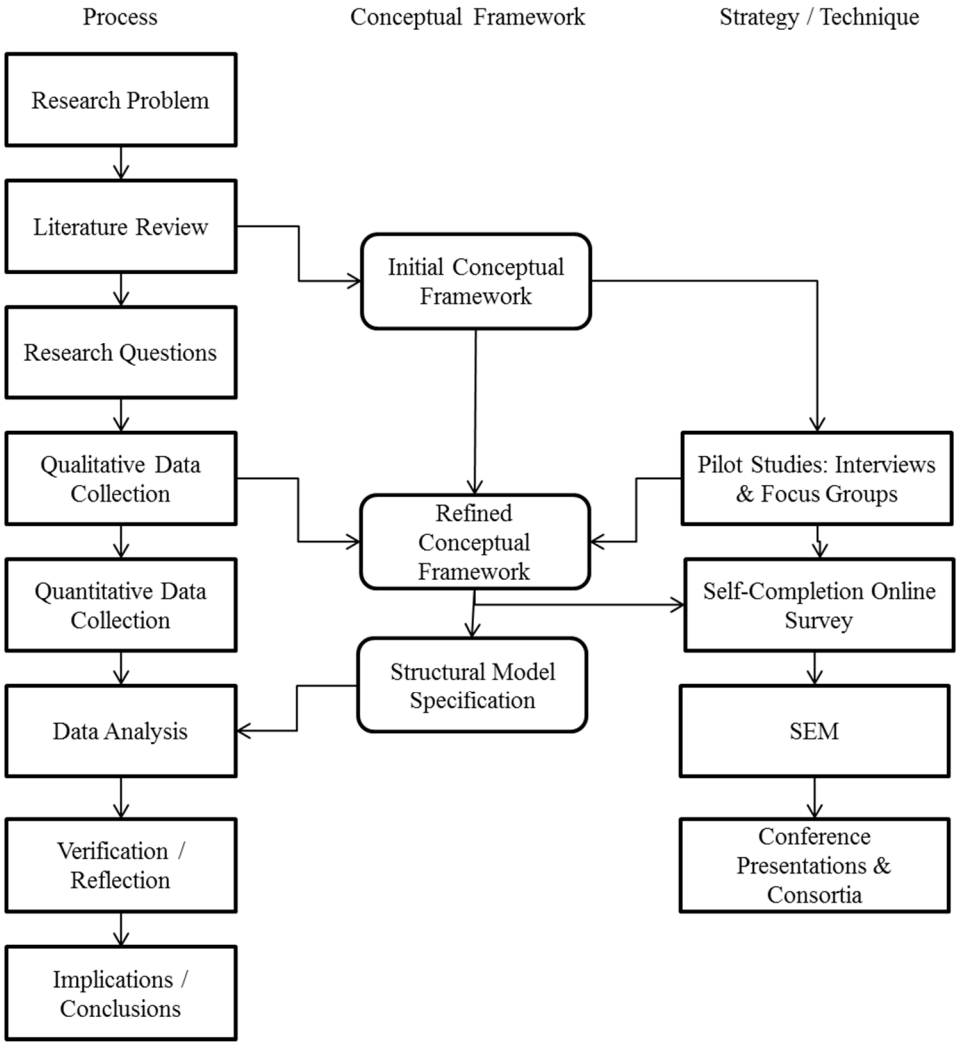
Table 5.4 – Research Methods

Research Type	Brief Description	Purpose for the present study
Semi-structured interviews	Using an interview guide, the researcher asks questions, leaving the respondent flexibility in the way he or she wishes to respond. While the interviewer keeps the general conversation on track with the subject matter, certain deviations are desirable. The technique is particularly pertinent where experts are being interviewed and where specific knowledge can develop the researcher's thinking (Bryman, 2008).	Using evidence gathered from experts, to validate understanding of the process and workings of large-scale forums form the perspective of forum editors, bloggers and social media experts. ***Used in Pilot Test 1***
Focus Groups	A form of group interview where there are several participants and where discussion is led by the facilitator to investigate a tightly-defined subject. The aim is to highlight significant and important issues and it is important that the meanings are built upon the input of different members (Morgan, 1998).	(1) Understand the opinions of participants and by group discussion to appreciate their perspectives on influence in online communities. (2) Gain deeper understanding of the constructs via different perspectives. ***Used in Pilot Test 2***
Questionnaire Pilot	The pre-test of survey question in a pilot is important to establish the usability of the survey. Also for testing to identify and remove ambiguity or other sources of lack of clarity in questions.	Survey pre-test to validate the survey, online software and order of questions / sample prompts. Separate tests to validate the categorisation of Posts A and B. ***Used in Pilot Test 3(a and b)***
Self-completion questionnaire	Development of a survey to include quantifiable measures and a collection of indicators of the constructs under consideration. Questions should be composed to ensure that the correct indicators are being tested (Bryman, 2008).	The survey was refined to take into account the feedback from the pilot subjects and changes were made to the presentation within the online software. Specific amendments to pre-amble and prompts depending on the forum context (i.e. survey was personalised for each one). ***Used in main data collection.***

5.2.3 Research Process

In order to conduct valid, reliable and generalizable scientific research it is necessary to design a clear process which could facilitate future replication and contextualisation (Bryman, 2008; Gill and Johnson, 1997). The following flow-diagram outlines the process undertaken to develop and empirically test the conceptual model that forms the basis of this research study.

Figure 5.2 – Research Process



5.2.4 Sampling Strategy

The aim of the research is to understand interactions between members of special-interest online communities, with particular interest in the factors that allow one post or poster to exert more influence in the community than another. The definition of this type of VC has been adopted from Morgan (1998): members of such communities are understood to share a set of common traits and, in each context, common interests related to the subject of the community. In order to recruit an appropriate number of respondents to create generalizable findings, the sampling strategy had three phases: first, to recruit forums that would be willing to host and promote links to the survey. Second, to invite members of the forum to participate in the survey. Last, to select examples of posts to show respondents who commenced the survey.

Forum sampling strategy - A random sampling strategy would suggest that individuals from all such forums should be approached to participate in the survey. However, the enormous range of forums available on the World Wide Web would make this impractical so random sampling strategies were rejected in this case. In order to remove the practical constraints, a purposive sampling strategy was employed to recruit forums. Purposive sampling can be criticised for introducing researcher subjectivity when choosing participants, although, this can be mitigated by a tight definition of participants and consistent classification (Black, 1999).

Taking this advice into account, the forums that were initially approached were selected based on online research of communities who were considered to have sufficiently active discussion. The following selection rules and classifications were taken into account when selecting the forums to approach.

Table 5.5 - Sampling rules for selection of forums to invite

Size of forum	Minimum of 50,000 active members.
Nature	Discussion forums encourage open debate by allowing members to start threads easily and where posts are moderated by exception.
Forum activity	The median ratio of total posts to members in the top forums ranking is approximately 75[(1)] so limits >50 and <100 were used to select.
Member profiles	Anonymous profile names allowed. Freedom for members to design their own profile.
Reputation score	Reputation score is not explicitly shown against the post in order to avoid cross-contamination issues by leading respondents.

[(1)] Statistics sourced from www.bigboards.com

5.2.5 Ethical Considerations

There are four ethical principles which need to be considered when designing research studies which are outlined below (Diener and Crandall, 1978).

Table 5.6 – Framework of Ethical Considerations

Area	Discussion / Mitigation	Pertinence in the Present Study
Harm to Participants	May entail physical harm or psychological harm, such as reducing participants' self-esteem, causing stress or affecting development. It may also include "inducing subjects to perform reprehensible acts" (p19).	No physical or psychological harm was considered to be an outcome of the research.
Lack of informed consent	Subjects should be given sufficient information on the study in order that they can make an informed decision on whether or not to participate.	All respondents were informed about the pertinent details of the research prior to involvement in the interviews, focus groups or survey. All sample posts used in the survey were (i) in the public domain and (ii) posters had signed over copyright ownership of all content to forum owners who granted permission to use.
Invasion of privacy	Of particular privacy relevance is the use of covert research methods where personal details are presented by subjects without full knowledge of the purpose of the research. Further, data privacy and anonymity are important considerations.	No covert methods were employed and all data has been analysed anonymously and in line with data management principles (Bryman, 2008).
Involving deception	Occurs when researchers represent their study as something it is not or mis-represent it in order to disguise the true nature of the objectives.	No deception was used as part of the study.

The research was conducted within the Research Ethics Framework as published by the Economic and Social Research Council (2012) as outlined in Bryman (2008).

5.3 Methods

5.3.1 Construct Validity

To ensure construct validity, a logical approach was taken to the initial design of the conceptual framework, selecting constructs from review of the literature and deducing hypotheses from relevant theory (Black, 1999; Bryman, 2008). The logical approach can be summed up as follows:

Theory → concept → constructs → question set

(Black, 1999: p220)

Existing scales were identified where possible. Where none exists, original questions were defined, taking into account any qualitative evidence from literature where available. The survey was tested with a small pilot sample (n=16) and original questions were refined as a result of feedback and were judged to have achieved face validity (Bryman, 2008). The pilot sample was too limited to be able to conduct statistical scale refinement tests so the factor-analytic approach of testing construct validity was rejected at this stage (Bryman, 2008).

5.3.2 Instrument Validity

There are a number of important considerations when designing a data collection exercise using self-completion surveys, which are outlined in the following sections. Having ensured that there is consistency between the aims of the study, the concepts and the constructs in question, the challenge was to ensure that the instrument to measure them continues the flow of logic in order to provide a measure at a specific point in time. (Black, 1999).

Table 5.7 - Potential Design Problems

Potential Design Problems	Resolution Measures
Dissimulation, where responses are intended to present a different picture from reality to depict an imagined-self. This can be avoided by avoiding making the purpose of the survey non-transparent.	The majority of the questions are related to the respondents' perception of evidence presented, so the risk is considered low in the current research.
Social desirability bias results from responses that are in-line with social expectations or with the researcher's desire for the outcome of the survey.	Anonymous, online questionnaires significantly reduce the risk.
Bias towards either extreme or middle of a Likert scale may suggest indecision which is could be the result of poorly worded questions that do not encourage a firm decision.	Where possible, existing scales with pre-tested scale reliability were utilised and where original questions were needed, they were pre-tested for clarity of purpose.
Misinterpretation of unclear questions or vocabulary will inevitably affect the validity of the results.	
Captive audiences or forced responses may result in random or intentionally misleading responses which may affect the validity.	Respondents were voluntary and, while questions were required for completion, respondents were encouraged to complete honestly.

(Adapted from Black, 1999: p224 citing Cronbach, 1990; Mehrens and Lehmann, 1984; Murphy and Davidshofer, 1991)

5.3.3 Self-completion online questionnaires

The use of self-completion questionnaires is a distinctive, deductive research strategy predominantly associated with a positivist approach (Bryman, 2008). In recent years, a range of software tools have become available to allow researchers to collect data online; the specific type used for the present study was available from www.qualtrics.com, which is the preferred option for the University of Bath School of Management.

The full questionnaire is shown in Chapter 7 and was designed to utilise a range of design techniques to ensure maximum effectiveness of the questionnaire. These included: the use of Likert scales (positive and negative wording); multiple-indicator measures; semantic differential scales; and attention-filters such as visual prompts at two points in the survey and inclusion of open-ended questions to minimise repetition. (Black, 1999; Bryman, 2008).

In order to compare the differences within forums depending on message type, two samples messages were selected for each. The procedure outlined by Black (1999) was followed for the selection of the messages and are outlined in the procedure in the particular study (Section 5.3).

5.3.4 Common Method Bias

Variance that is attributable to the measurement method as opposed to the constructs presents a possible problem for behavioural research. It is a particular risk in studies where it is not possible to measure predictor and criterion variables from different sources or in different contexts (Bryman, 2008). The aim in the present study is to test the constructs that predict influence in a sample of VCs; specifically, special-interest online forums using an internet based survey instrument and care has been taken to avoid common method variance (CMV) leading to misleading interpretations.

Due to the complexity of the constructs in the conceptual model, it was important to use pre-existing scales where they existed. While this helped avoid one source of CMV because the items were well tested and were not overly-complex or ambiguous, in some cases, the scale formats and anchors were similar which increased the risk of CMV.

Podsakoff et al (2003) offer a range of recommendations which are intended to advise researchers on avoiding this pitfall and, where possible, these recommendations have been taken in the design of the survey. Examples of steps taken are: (1) ordering the questions to mix up the 7-point Likert scales with the semantic differentials in the online version of the survey; (2) questions were designed to be clear and unambiguous, using commonly used language; (3) data is being collected across a range of internet forums so the respondents will come from a range of backgrounds; (4) the questionnaire was pilot-tested across 15 members of different VCs and any feedback was incorporated; (5) the use of reverse coded questions to break up any patterns in completion.

5.3.5 Non Response Bias

Non-response bias is a type of non-sampling error which can occur when some members of the population refuse or are unable to participate in a study (Bryman, 2008).

Low response rates do not necessarily indicate bias: where respondents demonstrate similar characteristics to the overall population, no bias is said to occur (Dillman, 1991; Krosnick, 1999) although it is often difficult to estimate the extent to which the sample represents the whole as non-respondents are unknown (Dey, 1997). Where non-response bias is demonstrated, conclusions can be misleading and certainly are not generalizable (Rogelberg & Luong, 1998).

However: "The recent studies of Keeter et al. (2000), Curtin, Presser, and Singer (2000), and Merkle and Edelman (2002) lead to the impression that nonresponse rates are a much smaller threat to survey estimates than suggested by prior practical guidance." (Groves, 2006: p657).

This is particularly noted in internet-based surveys aimed at individuals such as the one employed in the present study (Bryman, 2008). Researchers have a number of issues with which to contend: first, the members of the community may be completely opaque, particularly in those who allow anonymous membership. Second, it is impossible to accurately assess which members of a community would have seen the link to the post (due to issues of site clutter, complexity, user attention and interest). Third, the presence of 'lurkers' in a site makes it difficult "to obtain an accurate sampling frame or an accurate estimate of the population characteristics" (Wright, 2005).

It may be possible to consider these to be the reasons why non-response bias is often ignored in studies of the nature of the present research, including some highly-influential works on e-WOM, where data has been collected in similar ways (Hennig-Thurau et al, 2004; Hennig-Thurau and Walshe, 2003; Goldsmith and Horowitz, 2006; Jalilvand and Samiei, 2012; Sussan et al, 2006).

One exception is Gruen et al (2006) who acknowledge the issue in research design and avoid the phenomenon by following up a forum-based data collection method by encouraging the forum editor to email all members asking them to participate. However, in comparison with some of the studies mentioned above and the present research, the study was based on a single community of a relatively small-size (5,000), making the 'personal touch' possible. The other important factor is that the study itself was anticipated by the researchers (and presumably the forum owners) to be directly beneficial to the community so the editors were motivated to co-operate. Due to the size and complexity of the forums, as well as the fact that the survey was not directly beneficial to the forum editors who had participated in the present study, it was deemed inappropriate to ask them to take this approach.

There are a number of techniques which to assess the presence of non-response bias: (1) comparing response rates across sub-groups, although the presence of accurate records of population and sampling frame are pre-requisites; (2) using supplemental sampling data, which is not always readily available; (3) comparisons to similar estimates from other sources; (4) studying variation between the main study and follow-ups, although, in studies of this type where the respondents took the option to remain anonymous, it is not possible to accurately assess who to approach for a comparison response (Wright, 2004). It was felt that none of these offers a realistic or actionable strategy given the limitations of the present study.

According to Rogelberg and Stanton (2007), the most reliable method of avoiding this type of error is to demonstrate generalizability using a different set of research methods. This appears to be the most effective method to ensure that the validity of the study is not compromised due to the existence of non-response bias. However, it outside the scope of the PhD study itself and suggestions for future studies are outlined in Chapter 9. Therefore consideration should be given to the potential effects, should this risk manifest.

This being given, it is necessary to consider the possible effects of non-response bias on research. For example, studies into childhood obesity "likely systematically to underestimate the prevalence of overweight and obesity" (quoted in Hawkes 2006: p24) due to parents of heavier children not agreeing to participate in such studies.

The risks of similar effects on the present study have been considered and are summarised in Table 5.8.

Table 5.8- Risks of non-response bias related to the present study.

Risk of Non-Response Bias	Mitigation
If members clicked on the link are they the ones who are susceptible to influence in the first place?	The headline contained no information other than the act (involvement in the survey) and the potential to win a prize, so would not have influenced in the way this risk implies.
Does the potential reward systematically attract those members who are not representative of the population?	It is difficult to imagine specific characteristics that could bias the response group. Also, the use of a small reward is a common way of avoiding non-response.
Are those who are prepared to invest 10-15 minutes of their time more committed to the forum (per Gruen et al, (2006)?	This is not likely in this case as there was no inference in either the link or the pre-amble that the survey was for the benefit of the forum or any other cause or interest outside the research itself.
Could those who responded represent those members who were more altruistic (i.e. wanting to help a student)?	This is possible, although the characteristic altruism is not seen to affect the overall outcomes in any relevant or negative way.
A student study could have attracted those with a higher education level (ie those who felt an affinity with a student project)?	This is possible, and would show up in the education levels of the respondents.

It was concluded that these risks were partially mitigated as outlined above, but even in the case that the mitigation did not materialise, the effects to the project were low: none of them suggests an inherent propensity towards behaviour or attitudes that would have biased their responses.

Arguably, if they are higher-educated, connected and involved with the community (Katz, 1986), this may suggest that they themselves could be more likely to be opinion-leaders, but this itself would not lead to a bias.

This issue is highlighted in the limitations which are outlined in Chapter 8.

5.3.6 Main Analysis Method – Structural Equation Modelling

The analysis of a range of inter-related constructs and questions requires a technique which facilitates the analysis of multiple-relationships in a single model. As a result SEM was chosen above other powerful and statistically efficient methods which can

only analyse individual relationships at a time (Hair Jr et al, 1995). SEM is an extension of a range of multivariate statistical techniques, for example multivariate regression and factor analysis (Hair, Jr et al, 1995).

SEM allows the researcher to take a confirmatory approach to the causal processes that affect several variables at the same time (Bentler, 1990). A range of regression equations are calculated simultaneously and these can be represented graphically in order to allow a "clearer conceptualisation of the theory under study…If the goodness of fit is adequate, the model argues for the plausibility of postulated relations among variables; if it is inadequate, the tenability of such relations is rejected." (Byrne, 2001: p 3).

A further justification for the use of the technique in the present research is the hypothesised existence of latent variables, which are not directly measureable. SEM is a "comprehensive statistical approach to testing hypotheses about relations among observed and latent variables." (Hoyle, 1995: p1). As such, the technique is consistent with the positivistic ontological approach of the research study (Schumacker and Lomax, 2010)

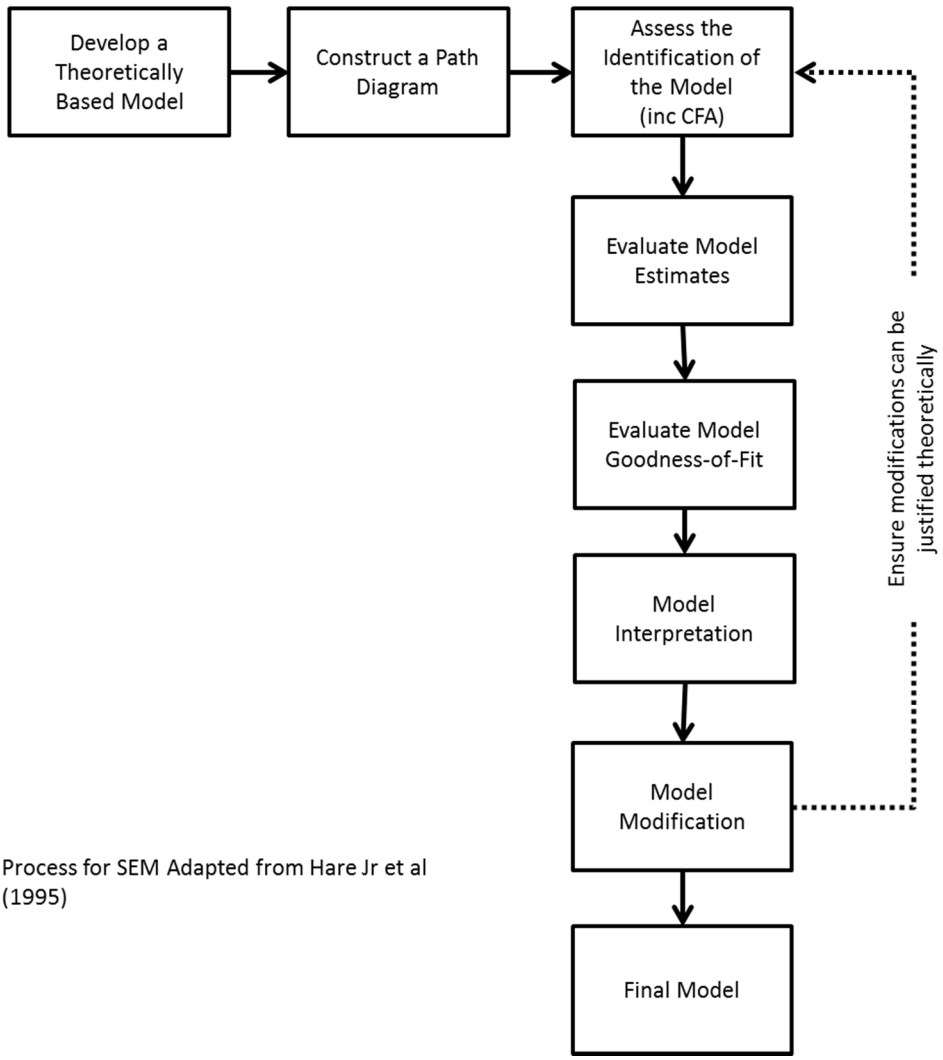
SEM has become a popular technique for data analysis (Byrne, 2001; Tomarken and Waller, 2005) and has a number of strengths but also has a number of limitations which have led to some criticism in the literature (Baumgarner and Homburg, 1995). These are summarised below.

Table 5.8 - Structural Equation Modelling Strengths and Limitations

Strengths	Criticisms and Limitations
Takes a predominantly confirmatory (as opposed to exploratory) approach to the data analysis, so is particularly well suited to hypothesis testing. (Byrne, 2001)	Alternative models may fit equally well and researchers are accused of over-stating the certainty and strength of their individual model (Tomarken and Waller, 2005).
SEM is more capable than many other statistical techniques to manage multiple observed variables to understand phenomena (Schumaker and Lomax, 2010). Alternatives provide "mini tests" where equations are performed individually (Tomarken and Waller, 2005).	Analysis of modification indices facilitates post-hoc analysis of individual relationships and overall model fit. Researchers can be tempted to make amendments which are statistically indicated but not theoretically supported (Byrne, 2001; Baumgarner and Homburg, 1995).
Requires relationships to be specified in advance so supports inferential requirements of data analysis. (Byrne, 2001)	Cannot be performed on incomplete data meaning that statistical techniques are required (e.g. list wise deletion, pairwise deletion or means imputation) but these can introduce bias and data inefficiencies (Tomarken and Waller, 2005).
Provides clear estimates of error variance parameters. This creates a clear advantage over traditional multivariate procedures which cannot either assess or correct for measurement error. (Byrne, 2001; Schumacker and Lomax, 2010; Hair Jr et al, 1995)	Many studies can omit important variables and goodness of fit measures does not necessarily guarantee the inclusion of all variables in the model (Tomarken and Waller, 2005).
SEM can measure unobserved (i.e. latent) as well as observed variables. (Byrne, 2001; Hair Jr et al, 1995)	SEM does not compensate for raw data issues and researchers are cautioned not to rush to model without dealing with these (Baumgarner and Homburg, 1995)
SEM can estimate point and/or interval indirect effects [which are important for including mediating effects in a model] (Byrne, 2001)	Researchers using SEM are criticised for frequently ignoring the rules of normality which underlie SEM assumptions. (Baumgarner and Homburg, 1995; Tomarken and Waller, 2005).
SEM can detect differences between different groups to understand the limits of theory (Schumacker and Lomax, 2010)	Goodness of fit statistics can ignore important relationships between lower order constructs. This can be mitigated by investigation of effect sizes which are often unreported (Tomarken and Waller, 2005).

The research has been designed in order to take advantage of the strengths and in all cases, measures have been taken to avoid or minimise the effects of the limitations. Details of such procedures are shown in Chapter 7, but Figure 5.3 indicates the process which was followed for the analysis of the data, which has been designed to avoid common mistakes for SEM analysis.

Figure 5.3 - Procedure for conducting SEM



Process for SEM Adapted from Hare Jr et al (1995)

6 Pilot Studies

Research into influence in online communities is in its infancy and the present study has been designed to extend theories in offline influence that data back to 1950's. The internet context means certain community behaviours which may be different from 'real life' (Wellman, 1999; Rheingold, 2000). Thus it was important to understand the extent to which online community norms may affect the conceptual framework intended to support the research. This need was operationalized in three ways: interviews with experts in online communities, forums and social media were consulted in semi-structured interviews. Next, active members of online communities such as social networks and forums were invited to participate in focus groups where the discussion focussed on their 'consumer' perspectives of the constructs being used in the conceptual framework. These studies identified the need to establish a pre-test procedure to understand readers' perceptions of the content of the sample posts planned for use in the survey instrument are reported later.

The data collected in both the interviews and the focus groups were analysed in line with the recommendations from Miles and Huberman (1984). The specific coding procedure was derived from Bryman (2008). Themes were analysed with particular note being taken of the methods to note indigenous typologies and metaphors were of particular relevance in the context of VCs where new language and norms or expectations of behaviour have developed (Ryan and Bernard, 2003)

The researcher undertook a detailed, in-depth analysis of the data from the interview transcripts and focus group recordings and data were coded in line with the constructs from each of the conceptual areas from the literature, aiming to conform to a consistent form of social reality (Silverman, 2005).

Where individuals with significant expertise were recruited for the interviews, data collection finished at the point of theoretical saturation (Eisenhardt, 1989). In the case of the focus groups, it was noted that, while theoretical saturation point was met, respondents were from a relatively limited demographic profile and therefore the findings had limited generalisability into other demographic groups. (Bryman,

2008). However, it was judged that sufficient data had been collected to meet the needs of the pilot study.

6.1 Pilot Study 1 – Semi-Structured Interviews (Expert Witnesses)

6.1.1 Procedure

The aim of the interviews was to learn from individuals who held a level of expertise in one or more facets of the area of the research. A purposive sampling strategy as outlined in Chapter 5 was employed to identify such individuals and contact was made by email using a short outline of the study and to request their involvement. In total, 8 respondents agreed to participate in the interviews with direct experience of key subjects in this context: product and software development in a multi-national software corporation; editing / managing large scale commercial forums; blogging and; managing specific user communities.

As the respondents were all senior professional people used to voicing their opinions and likely to hold strong views on important elements of the research topic, a method that encouraged them to speak freely was appropriate. However, analysis of influence in VCs is a new research area so clear guidance was required to ensure the discussions were on-topic.

Semi-structured interviews were chosen as the most appropriate method to collect insights into the views of the expert respondents (Bryman, 2008). An interview guide was created and used to prompt questions; care was taken to heed the advice of Charmaz (2002) in defining the question types. The interviews were not of a personal nature but were concerned with the respondents' beliefs, behaviour and their stories; it was necessary therefore to vary the question types (Kvale, 1996).

Table 6.1 – Interview Guide

Author	Key Issue	Tentative Questions
Ren et al (2007)	The way sites are organised / designed affects the way people behave, particularly in forming groups. Common Bond vs Common Identity.	• Are members able to easily share personal information? • Can they do so privately in 121 contact? • Is there a 'mission' for the community? • To what extent do members buy into that?
CAB Desk research	Influence scores seem to be based on 'tenure' * 'frequency of posts' * responses * + or – key words. (Sourced from commercial sites).	• Does the site calculate an influence score? • Published or not? • How is it calculated? • Does it have a noticeable effect on member behaviour?
Rogers (1983), Granovetter (1973), McPherson & Smith-Lovin (1987)	Homophily is a powerful tie between individuals (the more they are alike the more likely they are to agree)	• Do they segment members? • Are there noticeable groups? • Are behaviours different between groups?
Kozinets et al (2010)	WOM Marketing represents firms' intentional influencing C2C communications 121 or using seeding techniques	• To what extent is the site aware of this? • Do they care? • Do they notice that members of the community police this?
Brown, Broderick and Lee (2007)	Web sites themselves are primary actors in online social networks and online communities can act as a social proxy for individual identification (i.e. if I don't trust another member that's ok as long as I can trust the site).	• Do the editors have experiences that bear out this finding? • To what extent does their brand seek to capitalise on this?
Next steps	NA	• Can we confirm that we are working with the site when we ask permission from the members to engage? • Do they have any particular poster in mind that they would suggest?

The interviews were transcribed and the views of the respondents were compared in order to generate a full understanding of the constructs.

6.1.2 Findings and Discussion

A total of 8 interviews were conducted with the following respondents, who were selected for their expert perspective on the subject matter.

Table 6.2 – Interview Respondents

	Background
R1	CEO of consultancy business; innovation manager in global software firm.
R2	Editor of a major global forum.
R3	Marketing Director of a major forum.
R4	CIO of online community; developer in major global software firm.
R5	Site administrator of large-scale internet forum.
R6	Professional blogger and forum contributor.
R7	Blogger and forum contributor; social media manager.
R8	Social media consultant and prolific blogger,

The interviews lasted between 37 minutes and 1hour 28 minutes in duration and all were transcribed in preparation for the content and thematic analysis. Analysis of the interviews highlighted three key themes which were important to the respondents and which were pertinent in the design of the quantitative study. The themes are outlined in the following sections.

Identification - There was general evidence across all the respondents that the way they and others use online communities affects the way they are perceived by their peers and that this affected their reputation. Respondents were familiar with the important facets to identification and reported that this affects the impact of their posts. This was to be expected, given the expert nature of the respondents.

R6's comments on the way she measures the impact of her blogs appeared to reflect similar views among the other respondents:

"So you could start measuring likes, comments, page views of the actual site. If I'm Twitter, how many followers…re-tweets I have"

Conversely, R3 highlighted the importance of presenting a consistently positive image, recognising that negative behaviours can follow a member and reduce their identification as a valued member of the community.

"If you're writing about something on the site, people will got into your post history to see what else you've written about and if they've been a troll across the site…they'll use that to consider the content"

R1 reported the involvement of the community sponsor in the development of influential members, helping them to identify with the community. This recognises the reciprocal relationship between community members and owners.

"[name withheld] beef up the reputation of their MVP's [most valued professionals] and reward them to encourage their participation in the group"

There was a general acknowledgement that messages needed to be authored with care and attention in order to gain the continued interest of other members of the community in order to sustain a reputation as a credible source. R7's statement is an example:

"Their reputation in that group was based on the fact that they posted fairly frequently,
but more importantly, everything they posted was useful. They clearly knew the technology inside out and could share it in a very informative, helpful and clear way. They were good writers even though they were not all native speakers of English."

This was seen to be particularly important given the prominence in the online literature on the value of information in VCs.

Two of the forum managers recognised the 'tribes' that exist within their particular forums, where members from one group receive much greater response in one tribe

than in another. This was an interesting nuance: the recognition that sub-groups operate within communities which, while sharing the same interest at the top-level, their personal perspective on the subject may be at odds.

Further, 'frequency of posting' was considered to be an important factor to develop reputation, but the quality and nature of previous posts were deemed to be important in members making their judgements on the value of a poster's contribution, for example R5:

"*We definitely notice in our forum that certain members have much bigger response due to their rep…but it may be specific to one particular area, in another part of the forum they may not have any real standing"*

R2, R4 and R8 (all three are community editors) recognised the potential shadow-side of the 'tribes' that exist within their communities:

"You don't have to look very far to see the dynamic of the camps that exist and often they use facts but, in reality, it's personal".

"Reciprocity has a lot to do with it, you know, one person gets support from another member and vice versa – they trade favours if they see themselves to be part of the same team".

"We definitely notice in our forum that certain members have much bigger response due to their rep…but that may be specific to one particular area, in another part of the forum they may not have any real standing."

These comments are partly consistent with Brown et al (2007) where the community or website are considered to be important actors in the relationships between members, but recognises that the sub-groups may present an important facet. Further, it supports the notion that, online, Katz and Lazarsfeld's (1955) contention that opinion-leadership tends to be domain specific. Evidence was uncovered that supported the inclusion of the 'site usage' constructs, suggesting that length of community membership and frequency of contribution are considered signs of relationships and support of the community ethos. Equally, the respondents were

aware that post history is available for other members to view, so will become an important factor in how others may judge an author. For example, R2:

"If you're writing something on the site, people will go into your post history to see what else you've written about and if they've been a troll across the site… they'll use that to consider content".

Overall, the respondents underlined the importance of the Identification construct and the relative prominence it holds in the conceptual model. The evidence further supported the chosen scale, which is outlined in Chapter 7.

Community Norms - Some of the discussion and quotes outlined in the previous section strongly suggest that the norms of the community are very much aligned with the need for an individual to identify themselves as a valued member of the community. This strongly supports Nahapiet and Ghoshal's (1998) suggestion that these are interlinked dimensions of a key source of social capital.

The conformity to community norms presented itself as an important theme in R2's commentary about the strength of internal norms policing within the forums he manages. These forums are focused very heavily on digital photography and off-topic discussion is very heavily discouraged (both by the forum managers and by the members). The members are generally understood to be very passionate about their subject matter.

"There is a significant proportion of our users who come more than 200 times a day…they have a sense of entitlement and ownership over the site."

R8 had similar views of the level of 'ownership' demonstrated by their users.

"Online groups have very strong views to protect their communities. Usually those who are in the know in their group have very strong ways of making others conform – you cross them at your peril."

The subject of anonymity was discussed by a number of the respondents and R3 explicitly acknowledged the differences between behaviour and norms on forums where the profile is encouraged to reflect the individual's offline identity (e.g. Facebook) or where anonymity is allowed or encouraged.

"The difference between [our site] and the Facebooks of this world is the anonymity…[there] are very sensitive reasons [for using it] like depression, eating disorders."

The discussion about anonymity highlighted that in some cases, the content of the messages will be needed to supplement any profile information in order for the reader to make decisions about the author's credibility, knowledge and the presence of shared attitudes. These make up the 'identification' construct and the evidence here supports its inclusion in the conceptual framework.

Network Ties - Both previous sections indicate that the structural source of social capital are important. Comments about *"their group[s]"* (R8), *"the camps that exist"* (R2) and *"reciprocity"* (R8) all suggest that the strength of the network tie is potentially important in the establishment of influence within a community.

The community editors who contributed to this pilot study were particularly aware of the tribes that exist within their communities and the co-creation of arguments, noting that they develop over time. It was necessary to develop original questions, based on Granovetter (1973), for this construct in the survey and the insight of these respondents was critical in ensuring that the questions captured the important elements: interaction with others, regularity of contact and reciprocal argumentation.

Information Value and Believability - Although these are treated as separate constructs in the conceptual model, for the analysis of the expert witness interviews, they appeared to be synonymous. In fact, respondents tended to focus on the value element of the information passed along, leaving believability to be a core element of it – as argued previously, not all believable comments are valuable, but most valuable information (in this context at least) must be considered to be believable. As suggested by R2:

"In terms of post credibility and how much kudos a member has…I would say rep isn't particularly high. It's one of many, so the number of valuable posts a person has made is important."

Consistently providing information which is deemed by the community members to be valuable was also seen by R7 to be important:

"What determined influence was that they thought leaders were recognised over a period of time to have certain expertise and others were recognised as trolls or idiots".

Recognition that certain members of the community can help others by sharing information was highlighted by R1 and R3:

"You're separating the community into what they're good at…it's about getting access to people who can solve problems."

"[name withheld] will pluck them out based on the quality of their posts and comments and they'll make them an MVP (most valued professional)".

The identification of particularly valuable members by the community editors to the extent that they will raise their profile in order to bring their content to the attention of other members of the community is interesting. This supports the relevant prominence of the information value construct in the conceptual model.

Influence in Virtual Communities - It was evident that Katz and Lazarsfeld's (1955) theorised two-step communication process has some resonance with these respondents: individuals with knowledge or expertise that is of value to the community are considered opinion-leaders and affect the decisions and opinions of some other members.

Comments of the commercial impact of the blogger or poster on the sales of the product were interesting and consideration was given to the effects of this on our study. While establishing whether there is a direct link between post comments and links to other sites is outside the scope of the present study and may be the subject of future research recommendations. These comments are broadly in line with the findings of Kozinets et al (2010), although R2's comment highlights the potential negative side.

"I tend to think that he who shouts loudest tends to be the one who gets the most attention in our forums"

R6 highlighted the importance of online opinion-leaders, particularly to brands who may be tempted to use them as a conduit to reach a wider audience.

"If you're a tech blogger and you write about a camera, and that post creates 1000 visits to the company's website, that's one way of measuring it. If I'm a mommy blogger and 200 of them purchase the camera, that's a whole different ball game."

This is a critical piece of evidence. In Chapter 3, the debate between researchers on the existence of influence in the online environment was discussed. On one hand, Watts and Dodds (2007) reject the notion that online Influentials can affect the perceptions or behaviour of their peers and argue the importance of simply having access to an audience that can easily be influenced. On the other, Cha (2010) suggests that particular content and design in certain Twitter members' 'tweets' can create cascades which may not have otherwise existed.

6.1.3 Formative Conclusions

The expert witness interviews strongly support the need to measure the constructs highlighted in the conceptual model: structural, relational and cognitive sources of social capital. Further, the evidence suggests that the currently polarised debate between social network analysts on the efficacy of the post warrants further investigation.

As well as confirming the inclusion of the constructs in the conceptual model, the interviews helped develop a more complete understanding of their dimensions and measures.

6.2 Pilot Study 2 - Focus Groups (Community Members)

6.2.1 Procedure

Having developed the conceptual model based on theory building from the review of the literature and discussion with informed experts, it was necessary to develop the understanding further by testing concepts (particularly the contextual definition of influence) with people who are members of various online communities.

Our sample was drawn from the population of post-graduate students in the University of Bath. Volunteers were recruited using various on-line methods, primarily the Post-Graduate Group within Facebook. Respondents were asked to volunteer to attend a 45 minute focus group session on campus and participants were rewarded with £10.

The only qualification criterion was that they should have been actively involved in a virtual community (Krueger and Casey, 2009). The aim of the focus group was to understand the group construction of an understanding of the term 'influence' in the context of posts in virtual communities, taking note of how individuals' contribution built on preceding discussion (Kitzinger, 1994).

The total sample was 17 participants run over 2 groups; a larger sample size was deemed to be appropriate as, although the participants were actively engaged in various virtual communities, their involvement in the specific topic of influential posts was thought to be low and our aim was to receive a larger number of brief comments rather than in-depth discourse on the subject (Morgan, 1998).

The focus group was conducted under the procedure outlined by Bryman (2008) and a short introduction was prepared to outline the context of the research (without leading participants) and focus group conventions. In addition, the researcher had a list of possible topics to prompt consideration by participants and Kreuger and Casey's (2009) recommendations for facilitating discussions were noted.

While the subject matter dealt with individuals' participation in virtual communities where it was feasible that personal information would be disclosed, no personal information was shared in the focus group itself and therefore it was deemed that no personal discomfort would be experienced or that there were other ethical concerns (Bryman, 2008).

6.2.2 Findings

Background In general the respondents were perceived to be regular and adept users of virtual communities, with their usage varying depending on the site. In particular there was discussion by a range of members about their contribution to financial

investment and mobile phone forums, while, in contrast a number read medical advice forums.

While all the respondents contributed to the focus group discussion, some respondents were less forthcoming than others: the majority of the comments in the first group were made by 8 of the members in roughly equal proportions while the other three made one or two points each; in the second, the contribution was more equal, perhaps as a result of being a smaller group.

All the respondents were post-graduate students in the University of Bath. However, it was possible to recruit a wide range of people from different geographical and cultural backgrounds. The researcher did not collect data on respondents' country of origin but from observation, the groups were split approximately in thirds: UK, mainland Europe and Asia/Far East. On reflection, not collecting this data creates a limitation; as Respondent R observed: "that's what I think, but perhaps others disagree as forum usage is different depending on where you're from"

The age range of respondents was 24-46 with the mean age of participants being 29. As such the groups were understood to be within the range of the largest group of virtual community users (Dutton and Blank, 2011).

The researcher used the focus group guide shown below to lead the discussion and occasionally to re-direct respondents back to the core subject. However, in general, the comments were on-topic and respondents were actively engaged in the topic. The opening explanation in both cases was made without a scripted introduction in order to let the style of the discussions start in an open, organic way but it contained the following key points which were intended to explain without leading or influencing discussions.

Table 6.3 – Facilitation Guide for Focus Groups

Facilitation and overview	• 45 minute session • Everyone's views are important to this research – only one person to speak at a time • All data will be confidential and anonymous
Brief background to research	• Firms are increasingly interested in who is influential in online communities. • The aim of this study is to understand the factors that make a post influential. • What are the key factors that affect the level of response a particular post receives?

The researcher had a range of prompts, which were used to control discussions and prompt participants' thought processes. The following are the notes used in the session, although these were not visible to participants.

Site Variables Both groups recognised the relevance of the forum subject-matter itself to their own judgement on the influence of individual posts within it.

> *S: "...and the name as well, if I went onto a site called Financial Accounting forum I would only assume experts would post on it and I'd judge the quality from there."*

The nature of moderation on the site was a key theme in both groups. Respondents saw it as the site responsibility to keep discussions on-topic and, particularly, to avoid spurious posting of spam advertisements.

> *J: "...if there's a load of spambot activity posting random links for Viagra throughout the forum I lose interest and move somewhere else."*

Other respondents were aware of the nature of tribes within virtual communities and of the community norms, which are used to police activity and reprimand transgressors.

C: "there are some specific words that are used. In some cases the members' reputations are built around the words they use or slang that they use among them. So your ability to use their slang and interpret their way of thinking is critical".

This was a point of partial disagreement: others felt that on certain occasions esoteric language was detrimental to their perception of the forum and its content. Following some discussion, the group concluded that if the forum was aimed at peer-to-peer discussions between insiders or experts, the use of specific language was necessary for acceptance or influence in the community. If, on the other hand, the forum includes novices, the use of such language may have detrimental effects to acceptance and influence although it also potentially serves to strengthen the in-group identity.

A small group of the respondents expressed strong views that the nature of the site made a difference to the value of the post. The bigger the site appeared, the less attractive it was to this group; interestingly, they judged this by design and overt affiliation with brands rather than on user numbers which are often readily available on forum home pages.

S: "I think that forums that are managed by a company that owns the product aren't real – they're just a big ad."
B: "I'd avoid the big forums where I'd assume that it would be full of people paid by Apple to prey on the weak so I'd be looking for the caves in the internet where people like [D] hang out and there's no-one there paid by Apple and you get a much more independent view from the nerds there. And that's what I want to see. I find some credibility on how difficult it is to find the forum."

This perspective on the 'site usage' and 'identification' construct was a departure from that of the field expert interviewees. It suggests support for the findings of Brown, Broderick and Lee (2007) who suggest that the website is an important part of the relationship between community members. As a result, the questions were refined to capture this perspective.

Posters' Self-presentation In both cases, the group discussion tended to focus initially on the members' self-presentation. They recognised that most forums allow users to be anonymous if they wish, so the name they choose is an important factor; in general, the sillier or more extreme the profile name the less likely it is to be credible.

> *B "...on a medical advice forum, the name Dr Harris would make me think they're probably ok."*
> *K: "Yeah, rather than Babycakes187"*
> *Researcher: "Even though you're conscious that they may not be a doctor?"*
> *B: "Yes, even though I know they are almost certainly not a doctor".*

The discussion extended to profile pictures and the nature of the avatars used. Similarly, the group agreed that the nature of the profile picture was related to the members' self-presentation within the context of the forum itself.

> *D: "...on my geeky sites [that I visit] I don't want to see a picture of the little twat sitting in front of his webcam. A little icon of a computer will do it, or what computer he's using, or his car. But if I go to a medical site...then I'd want to see a professional doctor at his desk with a plant in the background and sun coming through the windows."*

After some discussion, B summed up the groups' jointly constructed conclusion on how they view self-presentation:

> *B: "the one I'll trust the most will probably be the one which is best grammar, best vocabulary, sensible name, ideally a sensible looking photo and if they have reputation points then that's the one I'm going to trust the most."*

In the other group, B's summation was complemented by S's:

> *S: "...a clear argument. Supported with some facts or rationale that the reader can understand."*

The point about use of vocabulary was extended into register and the use of devices such as 'smileys' and emoticons.

> *A: "I use a lot of translation forums and the members there range from experts to teenagers who are learning Italian but don't really have a clue and their post is littered with smiley faces. You often find that they are completely wrong, but the way they've expressed it would indicate that they are a complete authority on the subject but there are a few clues that you can pick up on that suggest they are not a trustworthy source. Pictures, interestingly, are one: what picture they use, the way they speak the smiley faces and stuff suggests that they are not professional."*

After further discussion, the group agreed that the use of such devices can be important when required to demonstrate a layer of emotional content which is difficult to portray in a short form communication such as a forum post.

As well as highlighting the importance of the measures which make up the 'identification' construct, in the content used in their posts, this indicated the importance of the 'information value' and 'believability' and suggested that factual, rational arguments are favoured among this sample. There are limitations to this conclusion given the skew in identifying members of the focus group (i.e. post-graduate students), but it was considered an important factor.

Posters' behaviour In general, the members of the focus groups were attuned to the ways in which posts influenced their perceptions, attitudes and decisions. There was some evidence that purchase choices were made as a result of certain posts and that the respondents tended to place greater trust in these sources than in formal communications from the brand itself. This is consistent with the literature on word-of-mouth and personal influence.

However, there was also evidence that when the poster was overly positive, respondents were suspicious that they were not acting independently. When asked whether they were aware of posters acting explicitly on behalf of brands, the following discussions were noted:

S: "They usually put a link"

M: "They use very, very beautiful words to describe the product and that would make me believe it was an advertisement" and later:

K: "...yes, if someone is extreme positive or extreme negative, where I'd look for something more balanced."

Researcher: "Do you consciously think they might be being influenced?"

K: "Yes, I'd probably first think, oh he's a bit keen and then go on from there"

It was interesting to note that the level of response a post receives has a compound effect on its influence. Note from the following extract:

S: "I think, like, for the individual poster I sometimes look to see if they posted quite a few times. And if they'd only done it once or twice I probably wouldn't read it but if they're on there regularly like every day then I'd respect more what they say. If it was something technical that I don't know I'd assume they would know because they posted so many times."

Aligned with this point of view, some of the members concurred that they would take note of the poster's previous activity. The following seemed to sum up both groups' discussions on this subject:

K: "If somebody posts something and it generates a lot of discussion, maybe people are arguing things out or there's a great deal of interest in whatever this person said that would enhance the initial person's post's reputation. I'd be more likely to trust it and believe in what's being said."

Researcher: "would you go as far as to say that you'd only select the post to read in the first place based on its level of response?"

K: "Yes, I think so because then you're going to get the most information, the various views...so I think that would be your best bet."

While K's comment supports the previous suggestion that quantity of response increases influence, it also re-introduces the nature and sentiment of the responses. While it is not possible to directly measure these elements within the scope of the

present study, the sample posts were initially identified partly as a result of the quantity and nature of the response; for example, in the survey for Forum 1, Post A received 150 responses of a generally positive nature and which broadly agreed with the point contained in it, while Post B in the same survey received a similar number of responses but where there was more debate on the suggestion.

Both focus groups identified a number of ways posters can artificially boost the level of response a post receives. They identified a range of techniques and, while respondents were aware of them, they did not appear to necessarily judge the poster negatively as a result:

- The use of humour, where people respond to the joke not the subject of the post;
- Ending the post with a question, even when the main thrust of the post was a statement or observation
- Responding to responses to their post, particularly when entering into off-topic discussions.
- Reciprocal responses, where relationships were apparent between the poster and other members.

This was a particular issue to one respondent:

> *J: "Sometimes on forums members develop relationships and will refer to other members by name in their post and that will sometimes develop their credibility in my view."*

In both focus groups, respondents referred to "trusting" the posters comments and this was noted as a primary theme. However, in the context that trust was used, it referred to: the poster's knowledge (medical advice forums); their credibility either of the poster alone or in association with the forum; the believability of their post or their usage and self-presentation on the site. As a result the researcher has concluded that the focus groups largely supported the decision to include these as independent variables in the conceptual model.

6.3 Pilot Study 3 (a) - Sample Post Pre-Test

In order to understand the extent to which the content of the message may affect the influence it exerts, it was decided to test two different messages in each forum for the quantitative survey. It was necessary to test and compare the different posts so they were carefully chosen to represent fact-based or opinion-based content, in order to test H11. The procedure for selecting and validating the messages is outlined in this section.

6.3.1 Procedure

According to Perloff (2003) a message may be regarded as persuasive depending upon three factors: (1) Structure: one-sided or two-sided: does it argue both sides of the argument or focus on one perspective? Does it explicitly draw a conclusion? (2) Content: Does the message contain specific evidence to substantiate the claims? Is it clear that the facts support a proposition? and; (3) Language: Is the language direct and powerful? Are the statements unequivocal? Is the language intense or neutral?

Perloff's (2003) outline was used to categorise the messages prior to their final choice for use in the survey. Using software on www.qualtrics.com, each post was used as a sample and respondents were asked to rate the post using the following semantic differential questions using a 5 point Likert scale:

Table 6.4 – Post Rating Questions

#	Left (Score 1)	Right (Score 5)
1	Neutral	Intense
2	One-sided	Balanced
3	Well-justified	Not well-justified
4	Fact-based	Opinion-based
5	Formal	Informal
6	Specific	Non-specific
7	Uses direct language	Rambling

A small sample (n=10) was used to rate the posts and their findings are outlined below. Specifically questions 4-7 pertained to the fact-based elements of the post while questions 1-3 were used as control measures.

6.3.2 Findings

Table 6.5 identifies the mean score for each post, sub-set by the whole sample and each forum for the control questions and Table 6.6 shows the questions which were related to the hypothesis.

Table 6.5 – Mean Scores for each post and overall (control questions)

Sub-groups	Neutral to Intense	Formal to Informal	One-sided to Balanced	Mean score Q1-3
Post A	3.30	2.90	2.47	2.75
Post B	3.73	3.80	2.87	3.47
Post A Forum 1	3.8	3.7	2.7	3.40
Post A Forum 2	3.3	2.4	2.4	2.70
Post A Forum 3	2.8	2.6	2.3	2.57
Post B Forum 1	3	3.9	3.6	3.50
Post B Forum 2	3.6	3.4	2.8	3.27
Post B Forum 3	4.6	4.1	2.2	3.63

Table 6.5 – Mean Scores for each post and overall (hypotheses questions)

Sub-groups	Specific to Non-specific	Well-justified to Not well-justified	Uses direct language to Rambling	Fact-based to Opinion-based	Mean score Q4-7
Post A	1.57	1.97	1.93	2.20	1.92
Post B	3.50	4.20	3.97	4.50	4.04
Post A Forum 1	1.3	1.8	1.5	2.1	1.68
Post A Forum 2	1.2	1.9	1.6	2	1.68
Post A Forum 3	2.2	2.2	2.7	2.5	2.40
Post B Forum 1	3.3	3.8	3.7	4.3	3.78
Post B Forum 2	4	4.2	4.3	4.4	4.23
Post B Forum 3	3.2	4.6	3.9	4.8	4.13

In the control group of questions, the mean scores are generally similar, with a small range between Post A and B. However, where questions 4-7 are concerned, there are clear differences: the Post As were rated below 2 and the Post Bs were rated overall

at above 4. This led to the conclusion that the Posts that were selected to be 'fact-based' and those selected to be 'opinion-based' were valid and would lead to robust conclusions.

Pilot Test 3b involved testing the full questionnaire for usability and clarity among group selected by convenience sample (n=19). Changes were made to the wording of questions and the flow of the online survey.

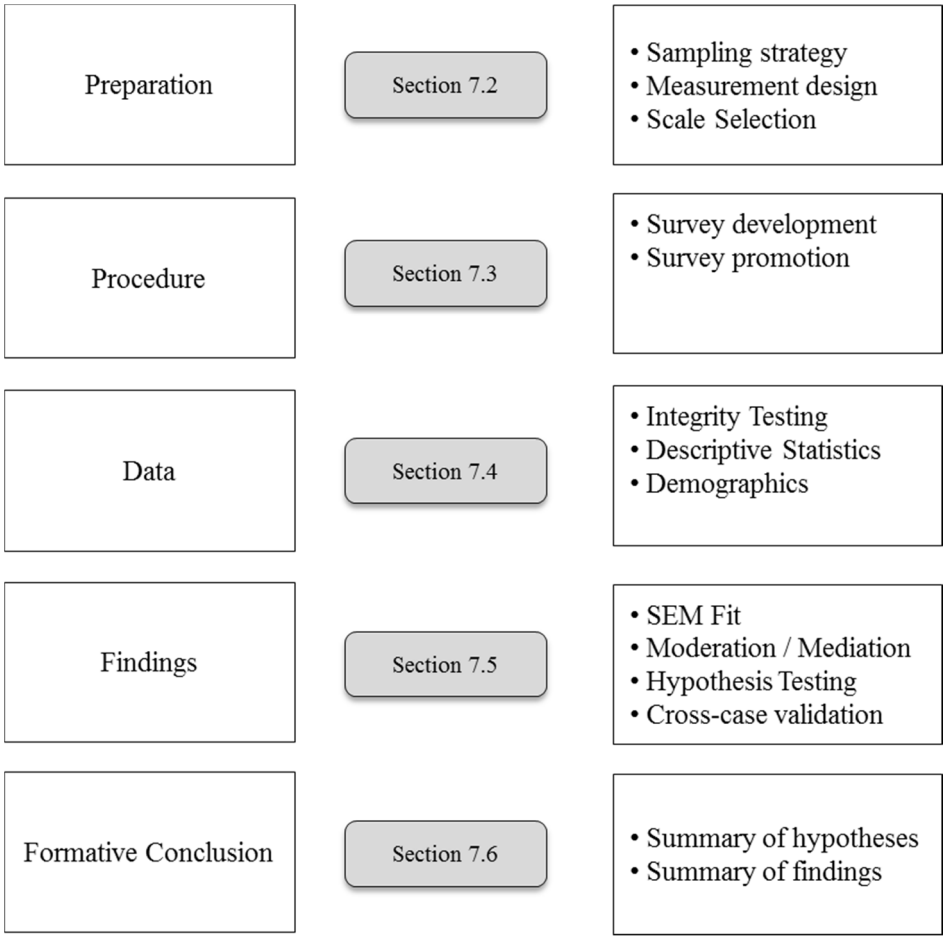
6.4 Formative Conclusions

Three pilot studies were carried out. First, the expert-witness interviews supported the measurement of social capital sources as a suitable method of identifying potential influencers. Further, the evidence strongly supported the notion that individuals can purposively influence other members of their community by behaving in certain ways. Second, the focus groups helped understand community members' behaviour and perceptions and were especially useful in selecting the sample posts which would be used in the survey. The final pilot study tested perceptions of the selected sample posts for fact-based or opinion-led content, which was critical for an overall understanding of the quantitative findings and, specifically, to test H11.

7 Procedure and Findings

Chapter 6 provides an overview of the pilot studies and concludes with a confirmation of the conceptual model that was first outlined as part of the hypotheses development. The main study related to the present research project is a quantitative study to be conducted among a sample of members of various VCs. This chapter reports the procedure for this study and outlines the findings, which will then be discussed later.

Figure 7.1 – Chapter Overview



7.1 Preparation

7.1.1 Measurement Design

As outlined in Chapter 5, the process outlined by Black (1999) was followed to avoid problems with the validity of the survey. These are categorised into four groups, depending upon the effect the invalidity may cause and are explained as follows: (1) construct refers to the operational measures; (2) internal validity ensures

that the design identifies causal relationships; (3) external validity ensures that the sample and the conditions are representative of the population and; (4) statistical validity ensures that the tests are appropriate to the measures and research question and are not influenced by the data collection process (Black, 1999). A number of strategies were employed in order to avoid or mitigate the risks of invalidity which are summarised below.

Table 7.1 – Sources of Invalidity

Sources of invalidity	Description (risk / issue)	Type of validity affected*	Mitigated by:
1. Comparison (groups) 2. Time: other events 3. Time: maturation	Just one group Additional to treatment Change of subjects	I I I	Same survey conducted in three groups in the same time span.
4. Selection (sample) 5. Selection (regression) 6. Selection (sample stability) 7. Time / sample interaction 8. Independent variable / sample interaction	Non random sample Classification of extremes Loss over time Delay reduces sample quality Poorly defined population	C, I, E, S C, I, E I, E I, E I, E	Population well understood and defined with sample risks minimised (See Chapter 5). Data collected at same time. Extreme groups discussed in data section.
9. Direction / nature of causality 10. Unnatural / invalid treatment	E.g. sequence not established Difficult to generalise	I, S E	Relationships well defined in literature. Data collection method well defined.
11. Invalid measurement of variables 12. Instrument validity	Instrument / classification Low reliability	C, S I	Where available, existing, robust scales with high reliability used. Where not, pilot tested.
13. Learning from instrument 14. Instrument reacts with variables 15. Other interactions	Influences dependent variable Often during data collection Idiosyncratic to designs	C, I C, I, E, S -	Survey designed using best practice and pilot tested to test for bias.

*Key: (C) construct (I) internal (E) external (S) statistical

Source: adapted from Black (1999: p73).

The analysis outlined in Table 7.1 provided re-assurance that; in general, the study was well-designed and valid, leading to the potential for robust, generalisable findings. An issue was noted in that existing scales were not available for every

construct under investigation, but, as outlined in Chapter 5, the original questions were led by theory and tested in the pilot phase. Manifestation of this risk in the data would be evident by establishing the Cronbach Alpha scores, which are outlined later in this chapter.

Finally, the survey design was validated against procedures for structural equation modelling and found to conform to best practice (Byrne, 2001).

7.1.2 Sample Selection

The sampling strategy was outlined in Chapter 4 and the selection of the participants was carried out in accordance with this strategy. There are three elements to the sampling: first, the selection of online communities, within whose discussion forums the invitations to participate would be issued. Second, the participants themselves needed to be made aware of the survey and provided a link and all required information. Finally, the participants were given a sample of a representative post in order to prompt them. Details of the sample selection procedure are outlined in the following three sub-sections.

Forum Selection Following a detailed Internet investigation, nine forums were shortlisted. These represented a good cross-section of online activity in two key ways: first, there was a representation of product and general support and second, it was anticipated that the members would represent a wide range of age groups. The editors were approached and five initially agreed to participate. During the discussions to finalise participation, two forum editors decided to withdraw, due to incompatibilities between their commercial imperatives and university data management requirements.

Table 7.2 – Initial Forum Selection Matrix

Forum (anonymised)	Post:Member Ratio[1] (target 50 - 100: 1)	Outcome
Digital photography	77:1	Participated in the survey and interviews.
Audio Visual equipment	24:1	Agreed in principle but did not go ahead.
Personal finances advice and comparisons	27:1	Declined.
Student support and information	51:1	Participated in the survey and interviews.
Guitar special interest community and forum	98:1	Declined
Armed forces community and	57:1	Participated in the survey and interviews.
Technology (hardware and gadgets)	21:1	Declined.
Technology (software and internet)	16:1	Declined.
Advice and support for Mums.	80:1	Agreed in principle but did not go ahead.

[1](Statistics gathered from http://rankings.big-boards.com/?p=1 accessed January 2011).

It is acknowledged that a purposive sampling strategy presents some limitations, particularly with relation to the introduction of potential subjectivity of selection but the selection process outlined above largely mitigates this. While this limitation cannot be fully removed, the advantages of eliciting the support of editors in recruiting participants were judged to outweigh the potential limitation.

Selection of respondents In promoting the survey, a number of links were placed as headlines in the forum site. The exact positioning of the links depended on the design of the site itself, and different areas were tried in order that members did not become bored of seeing the same link in the same place every time they logged on, but in each case the headline was prominent. Members of the community had the same chance of seeing and responding to the link, providing they logged onto the site during the period the links were live. It is considered then that the selection of respondents within the forums, while not entirely random, was close enough to be considered suitable for this type of positivistic research.

Example posts In each forum, sample posts were selected that were considered to be representative of the type of discussion within the relevant forum. A particular function within the Qualtrics software was utilised so that either Post A or Post B was served to respondents as they followed the link from the forum site through to the survey. The posts were served sequentially, meaning that respondents were selected at random to be shown either post, thereby minimising any bias and avoiding the involvement of any subjectivity in the selection process. The detail of the process for the selection of sample posts is outlined in Section 7.3.2.

7.1.3 Scale Selection

In order to reliably test each of the constructs under investigation it was necessary to identify an appropriate measurement scale (Easterby-Smith et al, 1991). Such scales must be relevant to the field and be robust, as evidenced by their Cronbach Alpha scores reported in published papers citing their use (Bryman, 2001). Risks related to the selection of appropriate scales are outlined in Chapter 5 and it is not the intention to repeat these here, although it is valid to note that the risks were taken into account when selecting the relevant scales.

Following a similar structure to Chapter 4, where the constructs were evaluated, the discussion for each one is outlined in the following sub-sections. The full operationalisation table is shown in the next section (Table 7.4).

Table 7.3 – Scales Adoption / Development.

Construct	Discussion, source of scale and justification
Conformity to Norms (Independent Variable)	Critical to the continuing efficacy of a community and visible to every member in many sites by the presence of statistics on users' post history, tenure, activity etc. giving evidence of trolling and flaming or behaviour, which is of value to the community. No scale exists to measure this so questions were original. Theoretical support was drawn from: Rheingold's (2003) description of community behaviour; Coleman's (1999) outline of community behaviour and social capital and; Misztal's (1996) definition of trust.
Source Credibility (Independent Variable)	Source credibility and knowledge have been evaluated as separate but distinct dimensions for the purpose of their justification. However, according to Berlo et al (1969), the two are intrinsically linked and share the same overall scale, where domain knowledge is termed as the 'qualification factor'. The scale is considered to be valid and "accounted for 60 per cent of the total variance" in the Lansing study (Berlo et al, 1969) with Alpha factor loading above the appropriate threshold (0.8). The paper is heavily cited (477 at the time of selection) and has been used in various contexts (for example: endorsers' trustworthiness (Ohanian, 1990).
Network Ties (Independent Variable)	This is Nahapiet and Ghoshal's (1998) structural source of social capital and is based on Granovetter's (1973) concept of strength of ties. Gilbert and Karahalios (2009) developed a prediction model based upon: the duration, frequency and structural elements of a relationship in addition to evidence of reciprocal support and sharing. No scale was developed, but the model was reported to predict the strength of a tie with 85% accuracy. The dimensions of the model were adapted to develop a 'network tie' scale, which was used in the survey.
Believability (Independent Variable)	Believability is distinct from credibility in that the former refers to the message (in this case the post) where the latter refers to the source. The scale adopted for the present study was drawn from the world of advertising, where it has been used to measure messages in a range of different contexts (for example: product effectiveness (Beltramini and Evans, 1985); cigarette warning labels (Beltramini, 1988) and political advertising (O'Cass, 2002)). These authors reported factor loading well in excess of the threshold level when tested using Cronbach Alpha scores, and the scale was deemed suitable for use.
Information Value (Independent Variable)	Information value has been noted to be a key element in: (1) the transmission of WOM (Brown, Broderick and Lee, 2007); (2) the development of one's 'digital self' (Schau and Gilly, 2003) and; (3) the viral progression of messages in social networks (Cha et al, 2010). The importance of the construct is highlighted by these authors, but no scale is available. It is acknowledged that a self-developed scale may present limitations to the research, although the questions were directly related to the key attributes of valuable information according to Hirschleifer (1973). The construct was tested from the perspective of its usefulness, availability, relevance to decisions and the nature of the content.

Construct	Discussion, source of scale and justification
Forum Scepticism (Hypothesised Mediator / Moderator)	Scepticism, or "the general tendency toward disbelief" (Obermiller and Spangenberg, 1998: p160) is considered an important factor in the establishment of advertising effectiveness and it is argued in Chapter 4 that it is of equal relevance in establishing the value of information online. Obermiller and Spangenberg's SKEP scale has been utilised in various marketing contexts and has been found to factor load beyond the expected threshold. As such, it was adapted for use in the present study. It should be noted that a high score in the responses indicates confidence in the forum.
Susceptibility to Influence (Hypothesised Mediator / Mediator)	The extent to which individuals are subject to influence from others in their choices is different from their conformity to group norms and focuses on the ability of others to cause them to change their views (Bearden et al, 1989). The resulting scale developed by these authors contains two dimensions: the normative one refers to the respondents' desire to been seen in a positive light by others and; the 'informational' dimension measures the extent to which the receiver considers information provided by others to reflect reality. The scale has performed in excess of expected thresholds in a number of contexts and was considered acceptable for the present study.
Influence (Cognitive and Conative) (Dependent Variables)	As outlined in Chapter 4, influence was measured across two dimensions which have theoretical grounding in the advertising literature: conative (intent to act) and cognitive (perception). While the constructs of the hierarchy effects model have been discussed in detail over 50 years (see Chapter 4), no specific scale was identified to measure them. As a result, the themes of the discussion were used and contextualised to the present study in order to develop original questions intended to measure the dimensions.

7.2 Procedure

7.2.1 Survey Development

The procedure for the pilot tests were outlined in Chapter 6 where the process of consulting members of focus groups to investigate the understanding of influence online but also to confirm that the scales were appropriately measuring the constructs. Following this, a questionnaire survey was developed for this purpose.

Where possible, existing scales were deployed, but where this was not possible, questions were developed based on extant literature and tested for face validity using a small pilot group (n=15). Standard demographic questions were asked at the end of the survey.

Table 7.4: Operationalisation Table.

Conformity to Norms (CN): How do you view the person who wrote the post?	
CN1 – Is a very active member of the community. CN2 – Is a long-term member of the community. CN3 – Appears to fit in with the community. CN4 – Appears to behave in the way the community expects. Strongly Agree (1) to Strongly Disagree (7)	Theoretical support was taken from: Rheingold's (2003) description of community behaviour; Coleman's (1999) outline of community behaviour and social capital and; Misztal's (1996) definition of trust.
Identification (I): How would you rate the person who wrote the post?	
SC1 – Just : Unjust (R) SC2 – Honest : Dishonest (R) SC3 – Emphatic : Hesitant (R) SC4 – Active : Passive (R) SC5 – Trained : Untrained (R) SC6 – Experienced : Inexperienced (R) SC7 – Qualified : Unqualified (R) SC8 – Skilled : Unskilled (R) SC9 – Informed : Uninformed (R)	Source Credibility and Knowledge taken from Berlo et al (1969). Where it was not possible to provide evidence of the variable in the post or where this was not relevant to the study, the item was removed. Ultimately the Source Credibility scale was 9 items across the safety, dynamism and knowledge dimensions.
Network Ties (NT): Prior to completing this survey…	
NT1 - …how close was your relationship with this poster? NT2 - …how often did you communicate with this poster? NT3 - …to what extent did you interact with this poster? NT4 - …how often have you traded favours with this poster (e.g. supported each other's arguments or shared information).	Gilbert and Karahalios (2009) developed a prediction model based upon: the duration, frequency and structural elements of a relationship in addition to evidence of reciprocal support and sharing.
Believability (B): I find the content of the post to be:	
B1 - Believable _ _ _ _ _ Unbelievable (R) B2 - Trustworthy _ _ _ _ _ Untrustworthy (R) B3 - Not convincing _ _ _ _ _ _ Convincing B4 - Unreasonable _ _ _ _ _ Reasonable B5 - Dishonest _ _ _ _ _ Honest B6 - Questionable _ _ _ _ _ Unquestionable B7 - Inconclusive_ _ _ _ _ Conclusive B8 - Not authentic _ _ _ _ _ Authentic B9 - Unlikely _ _ _ _ _ Likely Semantic Differential	Utlised Beltramini's (1998) 10 item scale which was originally developed to test believability of cigarette warning labels in advertising and has subsequently been adopted in a range of contexts. The question covering credible vs non credible was removed on the basis that this was being measured elsewhere in the survey.
Information Value (IV): Please state the extent to which you agree or disagree with the following.	
IV1 - The information is useful to me now. IV2 - The information will be useful to me in the future. IV3 - I think the post makes good suggestions. IV4 - I think the post contains valuable ideas. (1) Strongly Disagree (7) Strongly Agree	The questions were developed broadly following Hersleifer's (1973) attributes of information outlined in a previous section.

Forum Scepticism (FS): What is your view of on-line communities?	
FC1 - We can depend on getting the truth in posts in online forums. FC2 - The aim of posts in online forums is to inform other members. FC3 - I believe posts in online forums are generally informative. FC4 - Online forums are generally truthful. FC5 - Online forums are a reliable source of information. FC6 - Online posts are truth well told. FC7 - I feel I've been accurately informed after viewing posts in online forum. (1) Strongly Disagree (7) Strongly Agree	Adapted Obermiller and Spangenberg's (1998) SKEP scale for measuring advertising scepticism.
Susceptibility to Influence (SI): Please state the extent to which you agree with the following statements.	
SN1 – I rarely purchase the latest fashion styles until I am sure my friends approve. SN2 – It is important that others like the brands that I buy. SN3 – When buying products, I generally purchase those brands that I think other will like. SN4 – I often identify with other people purchasing the same products and brands. SI1 – To make sure I buy the right product or brand, I often observe what others buy. SI2 – If I have little experience with a product, I often ask my friends about it. SI3 – I often consult other people to choose the best alternative available. SI4 – I frequently gather information from friends about a product or brand.	Scale adopted from Bearden et al (1989) including normative and informational dimension.
Influence (Cog & Con):	
This post has changed my… Cog 1 - …opinion on the product / service Cog 2 - …belief in the product / service Cog 3 - …attitudes towards the product / service Cog 4 - …likely future behaviour I am likely to… Con 1 - …refer to this in my own posts Con 2 - …tell others about this post Con 3 - …share this post or forward it to others	Original questions developed from Lavidge and Steiner's (1960) Heirarchy of Effects model.

(R) Indicates the need for reverse coding in the SPSS file.

At the end of the study, participants were given the opportunity to provide additional feedback to the researchers and to enter their email address in order to enter the prize draw. This data was not stored with their study responses.

Demographic and additional questions were added to the end of the survey and these are outlined in Table 7.5.

Table 7.5 – Demographic and Additional Questions

Question	Measurement Scale
Are you…	Male / Female
What year were you born?	Respondents to input actual year
What is the highest education you have completed?	Less than High school / High School / Undergraduate / Postgraduate
What is your location?	Free text response
What is your political outlook?	Left of centre / Centre / Right of centre / None
What is your occupation?	Free text response
What is combined household income?	Much lower than average / lower than average / average / higher than average / much high than average
Are there any individual members of [the forum] whom you consider to write very influential posts?	Free text response
Is there any feedback you'd like to give on the survey or insights you would like to share?	Free text response

Steps were taken to minimise missing data during data collection including the use of forced choice questions. Further, measures were taken to avoid common method variance in the design of the survey following the guidance Podsakoff et al (2003). These included: (1) ordering the questions to mix up the 7-point Likert scales with the semantic differentials in the online version of the survey; (2) questions were designed to be clear and unambiguous, using commonly used language; (3) data was collected from a globally available internet forum so the respondents would come from a range of backgrounds; (4) the questionnaire was pilot-tested across 15 members of different VCs and all feedback was incorporated; (5) certain questions were reverse coded. As indicated in Table 7.4, data was manipulated to take account for reverse coded items.

7.2.2 Message Selection

To prompt a range of responses, and to allow for investigation of different types of message content, two real posts were chosen from the forum which discussed their authors' opinions on products associated with digital photography but through two different approaches (categorised in table two). As outlined in Chapter 5, the posts were initially screened to ensure that they were representative of the type of subject

discussed in the forum, and were selected initially based upon receiving a large response (>100 each).

Table 7.6: Message Content Summary

Forum 1: Digital Photography	**Post A**	**Post B**
Content	Purposive and direct. Arguments are justified and the importance is stated.	Sharing and discursive. Arguments presented and not justified.
Profile details shown	5 years tenure in community. Active participant	5 years tenure in community Active participant
Purpose of post	Discussion starter.	Discussion starter.
Forum 2: Student Support	**Post A**	**Post B**
Content	Purposive and direct. Fact-based with indication of importance.	Discursive and personal. Discussion of pros and cons of two products.
Profile details shown	3 years tenure in community. Active participant.	3 years tenure in community. Active participant.
Purpose of post	Discussion starter.	Discussion starter.
Forum 3: Armed Forces	**Post A**	**Post B**
Content	Purposive and direct. Fact-based with discussion of importance / meaning.	Discursive. Opinion-based.
Profile details shown	5 years tenure in community. Active participant.	2 years tenure in community. Active participant.
Purpose of post	Discussion starter.	Discussion starter.

As indicated in Chapter 5, the researcher had personally rated the Post A's to be fact-based and direct when selecting them and the Post B's to be opinion-based and discursive. This categorisation was subjected to a test among external raters who validated the conclusions. In the case of Forums 1 and 2, the tenure in the community by each poster was the same (5 and 3 years respectively). In the case of Forum 3, the author of Post A had been involved in the community for longer than the author of Post B, but this was not deemed to present problems in analysis on the basis that both had been active participants and were considered to be embedded in the community. Finally, in each case the purpose of the post was classed as being a 'discussion starter', meaning that the post was the initiator of a 'thread', meaning that it would be seen as the heading in the index and where it would be visible to each participant as they commented, irrespective of the number of posts in the thread.

7.2.3 Survey Promotion

As outlined in Chapter 5, the survey was deployed with the co-operation of three hosts of large-scale communities (digital photography, student support and armed forces) who posted links to it throughout the forum. The incentive of a nominal cash prize draw for those completing the survey was offered and the survey itself was hosted online over a two-week period in the spring of 2011.

An invitation to participate in the survey was posted on the front page of the participant site by the website owners. The wording of the invitation was *"Participate in our survey for a chance to win a prize"*. When users clicked on the link, a new page opened with an overview of the study, explaining that the project was being undertaken at the University of Bath and included some rules of the prize draw. If they gave consent by clicking 'begin the survey' they were then led through a multi-page online survey. On page one, they were shown a sample post (either Post A or Post B which was served sequentially to respondents). In addition, the respective poster's profile was shown in the survey in order to establish in the respondents' minds that the posters were regular, long-term contributors to the community to establish similarity and avoid confounds. Respondents were asked to consider this information when answering questions on believability and the value of the information.

7.3 Data

7.3.1 Descriptive Statistics

Data was downloaded from the software in www.qualtrics.com directly into SPSS Version 18 and the initial test was to establish the nature of the response data. Respondents were assured that their participation in the survey was voluntary and that they could withdraw at any point, so, naturally, a number of responses were incomplete and these were removed, leaving a total number of respondents of 1,970. Descriptive statistics are outlined in Appendix A from data file.

Missing Data Perusal of the descriptive statistics indicates that, while all cases were completed by respondents, a small number of variables contained missing data, which is to be expected in long surveys (Klein, 1998). In the worst case, 74 responses were missing, within the accepted threshold for of 5% (Hair et al, 1995)

and certainly well within the 10% suggested by Klein (1998). The cause of the missing data was assumed to be a technical glitch with the software as forced questions were used.

List wise deletion was considered but rejected on the basis that this would remove valuable information which would add value to the study as well as its statistical validity (Byrne, 2001). Imputation by way of means replacement was considered the most appropriate way of managing the missing data (Byrne, 2001). It was noted that standard deviation may be negatively influenced, although this was considered to be a minimal risk due to the relatively small number of missing data instances (Brown, 1994).

Appendix A shows the results of the descriptive statistics once means imputation had been completed, indicating that the final data file contained 1,970 cases, which was used for the Structural Equation Modelling.

7.3.2 Integrity Testing

A range of tests were conducted on the data to validate its appropriateness for the present study and to evaluate appropriate remedies.

Normality Due to the sample size, the statistical tests of normality are inappropriate for drawing firm conclusions (Tabachnick et al., 2001, Pallant, 2007). Inspection of the histograms, statistics for Kurtosis and Skewness (in direct terms and through the calculation of z-scores) showed that some items displayed the characteristics of positive-skew highlighted by Peterson and Wilson (1992) as is common in measuring customer self-reported data. Summary data can be viewed in Appendix B.

Kolmogorov-Smirnov and Shapiro-Wilk tests also indicated that the data exhibited positive skew, as shown in Appendix C. Given the size of the sample, the data was considered suitable for further analysis.

The recommended remedy for non-normality in structural equation modelling is the Bollen-Stein bootstrapping method, which “creates multiple subsamples from and original data base” (Byrne, 2001: p269). This allows researchers to more accurately

assess and draw conclusions from data which is likely to be more representative of the general population (Zhu, 1997).

Outliers Data was analysed for the presence of outliers using a range of tests. Appendix D shows the output from the descriptive data suggesting that in most cases, the 5% trimmed mean does not deviate substantially (<5%) from the overall mean, but that in three particular cases (Conformity to Norms, Network Tie and Influence) the variance is greater than 10%, indicating the presence of outliers (Pallant, 2007).

In order to identify the outliers individually, boxplot diagrams were produced and a number of outliers were identified (Appendix E). In addition, it was evident that a number of outliers were present in additional constructs (Identification and in Forum Scepticism). Inspection of the full list of extreme cases, it was identified that 31 cases could be considered outliers in some questions. However, given the design of the survey, it was perfectly feasible that if, for example, a respondent strongly felt that a certain post indicated attitudes that were strongly aligned with their own, they may score 7 in all 7 measures of this construct.

To assess the appropriate remedy, the procedure of profiling each case was followed as outlined in Hair et al (1984) and two data cases were removed, while retaining 29 to be included in the analysis. While it was noted that this may have negatively affected the statistical results, the remainder were retained on the basis of increasing the generalisability of the sample, given that overall they did not differ from the sample (Hare et al, 1984).

Special note should be made of the Network Tie construct, where it was expected that those with any form of relationship would be very small. In total, the forums have in excess of one million registered members, so for six randomly selected posts to have identified prior relationships with more than a small number of respondents would be unfeasible. Consideration was given to removing this construct but it was felt to be very important and its deletion would have detrimentally affected the value of the model. However, the effect of the outliers in this construct was significantly

mitigated by the performance of the Bollen-Stein bootstrapping referred to in the earlier section.

Common Method Bias The use of reverse coded questions, ordering of questions in the research administration should negate common method bias (CMB), however, Harman's single factor test was used to test the data for CMB as this is identified as the most widely used test for CMB (Malhotra et al, 2006; Posakoff et al, 2012). An EFA in SPSS was conducted specifying a single factor outcome. Variance extracted was 21.384%, indicating an absence of CMB (Malhotra et al, 2006).

Scale Validity To validate the reliability of the multi-item constructs being measured, Cronbach's co-efficient alpha tests were applied to the scales.

Table 7.7 – Reliability Scores

Construct	Cronbach Alpha	Items	*n*
Conformity to Norms	0.828	4	1,964
Source Credibility	0.902	9	1,894
Network Tie	0.895	4	1,964
Believability	0.928	8	1,924
Information Value	0.870	4	1,965
Cognitive dimension of Influence	0.963	4	1,960
Conative dimension of Influence	0.947	3	1,966
Forum Scepticism	0.912	8	1,966
Susceptibility to Influence	0.820	8	1,966

Using a threshold of >0.8 for acceptance of the scale validity (Field, 2009), the above were all deemed acceptable with no manipulation. The use of Cronbach Alpha scores assumes rather than assures uni-dimensionality (Hair et al, 1995) so, in addition, Confirmatory Factor Analysis (CFA) was performed in order to further validate the inclusion of the variables in the structural model.

Appendix G shows the CFA model used which conforms to the questions shown in Table 7.4. The results of the model are shown in Table 7.8.

Table 7.8 – Results from CFA finding

Statistic	Finding
GFI	0.903
CFI	0.944
RMSEA	0.042
X^2	4846.527
df	1092
p	0.000

The above findings were as a result of a reasonable amount of post-hoc manipulation to manage items where covariances existed. Table 7.9 outlines these changes which were conducted in line with the procedures outlined by Hair et al (1995) and Byrne (2001). Analysis of the Modification Indices (MI) identified a number of variables as being problematic, indicating a statistically significant probability that they are co-variant thereby justifying the inclusion of co-variance paths (Byrne, 2001).

Table 7.9 – Summary of amendments to model following CFA

Code	Basis for post-hoc amendment
SC4 and SC5	Covariance added due to conceptual overlap between perception of 'honest' and 'just'.
SC2 and SC4	Covariance added due to conceptual overlap between perception of 'active' and 'emphatic'.
SC3 and SC4	Covariance added due to conceptual overlap between perception of 'qualified' and 'informed'.
CN1 and CN2	Covariance added due to conceptual overlap between long-term and active membership of the forum.
FC2 and FC3	Covariance added due to conceptual overlap between the two measures of informative forum posts.
SC2 to SC5	Covariance added due to conceptual overlap between informed and experienced.

The addition of only six covariances in the independent variables in a model with this level of complexity is considered acceptable and proportionate with best practice (Byrne, 2001). Each post-hoc amendment is considered to be conceptually justified as explained above.

The CFA model is within acceptable limits in terms of Goodness of Fit (Bagozzi and Yi, 1988), but marginally below the combined threshold of Comparitive Fit Index and Root Mean Square Error of Approximation (Hu and Bentner, 1998). This is considered to be acceptable at this stage of the analysis as the addition of the path

relationships in the structural model may allow the model to reach the accepted limits. This decision was made in line with Byrne (2001) procedure.

All other items in the survey were used in the structural model following the CFA as shown in Table 7.4.

7.3.3 Comparison of Groups

Table 7.10 shows the split of respondents from the three forums.

Table 7.10 - Responses by Forum

Forum	Responses	Gender (M/F)	Mean Age
1	1,135	94% / 6%	46.5
2	596	44% /56%	20.4
3	238	91% / 9%	43.1

Perusal of the mean and median ages of the respondents indicates that they are broadly to be representative of those expected from each forum, thereby reducing the risk of the age-related source of non-response bias

Perusal of the Appendix F indicates the outcome of the demographic questions in the survey. The gender table shows a skew towards male respondents (overall 78% to 22%) and the largest single age group is made up of respondents under 21 (26.5%). Both findings are to be expected given the participating forums.

Respondents were reasonably well distributed through three of the educational groups (High School / A-Levels, through Undergraduate to Postgraduate: 34% / 28% / 33% respectively). Respondents with less than a High School education were under-represented at 5%. Politically, the respondents were split broadly into quartiles between right of centre, centre, left of centre and none. The indication of higher levels of education may suggest a risk of non-response bias, indicating that the lower-educated members did not respond. However, it is impossible to confirm this suspicion as no data is available for comparison. This is highlighted in the limitations.

Respondents were drawn from relatively senior job roles with 40% reporting intermediate or higher managerial or professional roles. The other group of note was ‘other’ at 38% but it is noted that the survey did not give an option of ‘student’

which would account for a large proportion of that number. Given that the second largest source of respondents was the student support forum where 77% of respondents were 'other' the conclusion that this category is largely made up of students is supported. As expected from the profile of the forums, the respondents were found from a wide global distribution from Forum 1 and more focused in the UK in both Forums 2 and 3.

Finally, the overall mean scores for each factorised construct were calculated and these are presented below. Of particular interest were the scores where the respondent was asked to judge a variable which was related to either Post A or Post B (fact- or opinion-based). These are outlined below.

Table 7.11 – Mean Scores

Group	Construct	Mean (7 Point Scale)	Std Deviation
Post A	Believability	4.9193	1.05091
	Identification	4.7742	1.02547
	Information Value	4.4364	1.28912
	Conformity to Norms	5.7062	0.95588
Post B	Believability	4.3807	1.14396
	Identification	4.6834	1.11140
	Information Value	3.5202	1.38490
	Conformity to Norms	4.8555	1.23823

7.4 Structural Equation Modelling

The research question in the present study aims to establish which factors affect the level of influence a particular post exerts within an online community, taking into account post and poster characteristics. The purpose of structural equation modelling is to identify the existence and direction of relationships between factors to understand phenomena (Byrne, 2001) and is therefore a suitable technique to answer the research question.

In order to fully investigate the elements of the research question and to indicate the extent to which the model is generalizable, the analysis procedure needed to achieve a number of objectives, which essentially make up the analysis strategy. In Chapter 4 (Section 4.6), the two dimensions of influence are discussed: (1) likelihood to propagate the message and; (2) the extent to which the message has changed the

readers' perception of the subject. The model needs to be tested against both these dependent variables.

Consideration was given to issue of whether to analyse each forum separately and then to compare for validity or to establish fit across the whole sample and then to confirm generalisability by establishing the differences in each context, using the multi-group analysis. It was decided to follow the latter route as this most closely followed the procedure outlined in Byrne (2001) and the example shown of data collected from a number of different schools therein was deemed to be similar in nature to the present study. This process is less explicit in Hare et al (1995) but in this case only one model was used, suggesting that this was acceptable even where data was collected via a number of sources. Further, the aim was to develop a generalizable model, valid across all VCs of this type so it was important to prioritise the fit across the whole sample in order to answer the RQ. Limitations to the generalisability of the whole model can then be established in cross-case analysis which is shown in Section 7.4.3, where each hypothesis is tested in each case separately. Some differences are found which are discussed and form the boundaries of the generalisability of the model. However, these are of a minor nature and therefore support the choice of analysis strategy which is outlined below.

Table 7.12 – Analysis Objectives

#	Outline of Analysis	Purpose	Method
1	Establish model fit (both DVs).	Overall answer to RQ.	Test model on all data.
2	Understand construct relationships.	Hypotheses testing.	Direct and indirect relationships.
3	Content analysis.	Hypothesis testing.	Test by Post A vs Post B.
4	Cross-case analysis (validation)	Test generalisability.	Test and hypotheses by forum.

The analysis has been undertaken in line with the above strategy and the findings are outlined in the following section, following the order and structure identified above.

7.4.1 Establishing the Overall Model Fit

The structural model was formulated and 2000 bootstrap samples were specified in order to mitigate the non-normality of the data (Byrne, 2001).

Initial analysis of the model identified an anomaly with the scales that had not previously been noted: Believability and Source Credibility both contain the semantic differential 'honest to dishonest'. In line with the procedure from Byrne (2001), this was removed from the Believability scale and the variable was linked to Believability from the Source Credibility scale. No further post hoc analysis was required.

The conceptual model is shown and fully discussed in Chapter 4 and is repeated here for reference.

Figure 7.2 – Specified Model

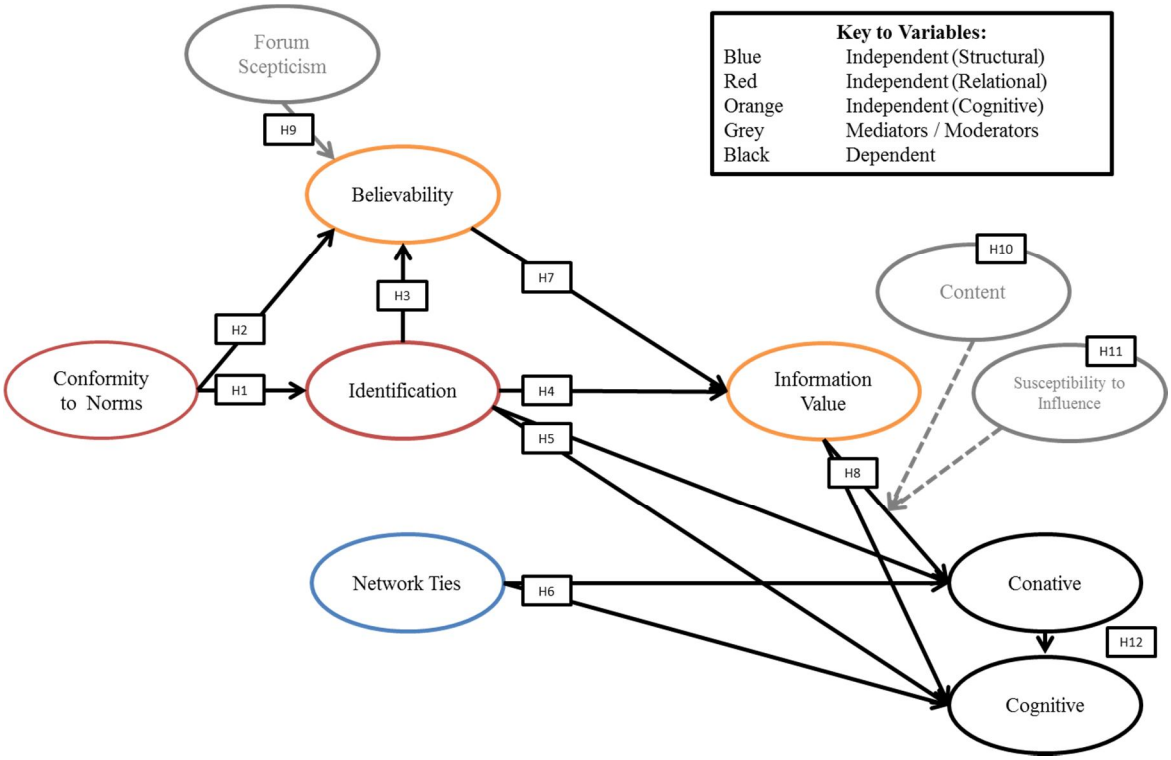


Table 7.13 – Fit Statistics (Conative to Cognitive Model)

Fit Index	Acronym	Finding
Goodness of Fit	GFI	0.922
Adjusted Goodness of Fit	AGFI	0.911
Normed Fit Index (Bentler and Bonnet, 1980)	NFI	0.944
Relative Fit Index (Bollen, 1986)	RFI	0.939
Incremental Fit Index (Bollen, 1989)	IFI	0.957
Comparative Fit Index (Bentler, 1990)	CFI	0.953
Root Mean Square Error of Approximation (Brown and Cudeck, 1993)	RMSEA	0.041
Bollen-Stein Bootstrap (testing that the model is correct)	*p*	0.000
Chi-squared	X^2	3148.320
Degrees of freedom	*df*	649
Probability level	*P*	0.000

Goodness of fit indices have been the subject of much debate among a number of authors (Byrne, 2001; Barrett, 2007, Schermelleh-Engel et al, 2003) and, in order to assess the suitability of a given model, it is important to consider a range of statistics (Tanaka, 2003).

The Chi-squared (X^2) test, which examines the ratio of X^2 and degrees of freedom, suggests that a correctly specified model exhibits a ratio of 2.5. However, this method is not deemed to be suitable for evaluating models with a large number of variables and large sample size as they make this statistic irrelevant risking plausible models being disregarded (Mueller, 1996). This model contains 52 observed and 9 latent variables, which is considered a relatively complex model and as such has not been used to estimate the goodness of fit, preferring the descriptive measures included in the output from AMOS.

The calculation of Root Mean Square Estimation Approximation (RMSEA) tests the null hypothesis of exact fit, and, assuming a reasonable sample size, is almost always rejected. Therefore, the appropriate term is 'close-fit', which is considered to be a model with RMSEA of ≤0.05 (Browne and Cudeck, 1993). The specified model in the present study report values of 0.044 and is therefore within this range. Certainly, it is well within the proposed 'cut off' threshold proposed by Hu and Bentler (1999) of <0.06. Steiger (1990) calls for researchers to also consider the confidence intervals when evaluating model fit using RMSEA. The model exhibits a high degree of precision (range of 0.003 between LO90 and HI90 scores with p>0.500).

This further supports the conclusion that the hypothesised model fits the data well. It is acknowledged that confidence intervals are heavily influenced by both sample size and model complexity (Byrne, 2001), but the results appear sufficiently robust to support a positive result.

Values which compare the specified model with no model are considered absolute measurements of fit (Hu and Bentler, 1995). These are: (1) Goodness of Fit index (GFI), which measures the relative amount of variance and covariance explained by the model and; Adjusted Goodness of Fit index (AGFI), which calculates similarly, but includes for the degrees of freedom and addresses the model parsimony by penalising the inclusion of additional parameters. The GFI threshold for describing acceptable fit is generally accepted at >0.900 (Bagozzi and Li, 1988). AGFI is more difficult to achieve in a complex model and the recommended threshold ranges from >0.930 (Tabachnick and Fidell, 2007) to >0.900 (Byrne, 2001; Schermelleh-Engel et al, 2003). This being a complex model in terms of variables, the lower threshold is adopted and the model is considered to fit the data.

The second important group of fit statistics are described as incremental or comparative fit indices (Hu and Bentler, 1995; Marsh et al, 1988). The most important are the normed fit index (NFI) and comparative fit index (CFI), both of which were originally proposed to have a threshold of >0.900, although this has subsequently been revised to >0.950. The model in the present study reaches the CFI threshold. However, for the NFI the fit is less impressive, although this is considered acceptable given the sample size, to which NFI has been argued to be particularly sensitive (Byrne, 2001). CFI has been proposed by Bentler (1990) as the most appropriate measure of model fit.

Finally, Hoelter's (1983) critical *N* (CN) estimates the sample size that would be necessary to yield an adequate model fit, with a value >200 being considered to represent the sample data. The CN for the models in the present study is 456, supporting the notion that the sample size (n=1970) was satisfactory.

It should be noted that statistical fit is only one of three recommended methods to assess the suitability of a model, the others being: theoretical fit and practical

considerations. Both these are discussed in Chapter 8, but in all three respects the model is judged to be a strong candidate to explain the phenomenon under scrutiny.

7.4.2 Hypothesis Testing

The following section reports the findings for the hypotheses outlined in Chapter 4. The first seven hypotheses lend themselves to tabular presentation, but the remaining hypotheses require further explanation to fully outline the tests.

H_{1-8}

Sections 4.7.1 to 4.7.7 outline hypotheses which highlight the *direct* relationships supported in the literature. Tables 7.16 and 7.17 highlight findings across both dependent variables.

Table 7.14– Summary of Hypotheses Tests

Hyp	Hypothesis Summary	SRW	CR	*p*	Finding
1	Conformity to norms positively affects identification	0.468	19.310	***	Supported
2	Conformity to norms positively affects believability	0.192	8.638	***	Supported
3	Identification positively affects believability	0.425	14.843	***	Supported
4	Identification positively affects information value.	0.140	5.441	***	Supported
5a	Identification increases likelihood to propagate.	0.058	2.048	0.038	Rejected
5b	Identification increases perception change.	0.047	1.994	0.046	Rejected
6a	Strong network ties increase likelihood to propagate.	0.230	10.422	***	Supported
6b	Strong network ties increase perception change.	0.056	2.772	***	Supported
7	Believability increases information value.	0.616	21.163	***	Supported
8a	Information value increases likelihood to propagate.	0.408	18.398	***	Supported
8b	Information value increases perception change.	0.216	8.388	***	Supported

SRW = Standardised Regression Weights CR = Critical Ratio p<.05*, p<0.1**, p<0.001***

In all cases, the relationship between the variables in the hypothesis is significant and each can therefore technically be judged to be supported. However, exceptionally, the SRW H5 with both dependent variables is small (0.047 and 0.038) which indicates that the effect is small. Further, the *p*-value in both cases is close to the theoretical cut off to indicate a significant relationship. Taking a practical, rather

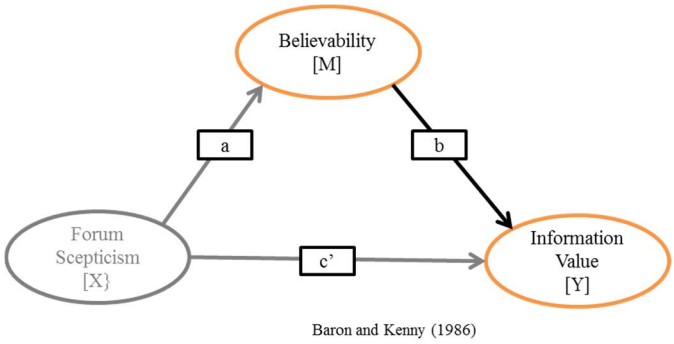
than purely statistical, approach to evaluating the hypotheses, the overall notion that source credibility itself directly affects an author's influence is questionable.

Testing the remaining hypotheses does not conform to the same presentation and each needs separate explanation as outlined in the following paragraphs.

H_9 – the mediating effect of believability

Section 4.8.1 hypothesises that believability plays a mediating role between forum scepticism and information value, suggesting that sceptics of forums are generally less likely to value information gathered in them, unless they find the message particularly believable. This focuses on the relationship between three particular constructs, which are outlined in the following figure, expressed in the form of the Baron and Kenny (1996) model. Numbers are presented once as they are not directly related to the dependent variable.

Figure 7.3 – Mediators Isolated for Illustration



Baron and Kenny (1986)

Interpretation of findings in Table 7.15 suggests partial mediation is present. In establishing the presence of mediation by believability between forum scepticism and information value, Baron and Kenny's (1986) four steps were followed. For models with latent effects (such as this one) it is advised to use the total effect for path c (Baron and Kenny, 1986). Results as outlined in Table 5 indicate that Believability partially mediates the relationship between Forum Scepticism and Information Value. The findings of the Sobel tests, which are outlined in the same table, support this finding overall and for DPR and ARS, although the Sobel test indicates mediation in Forum 2 while the SEM model does not. Overall, then the H9

is supported with a corresponding note on the generalisability of this particular finding, given the mixed finding in Forum 2.

Table 7.15 - Direct and Indirect Effects

Hyp	Model	Indirect (ab) SRW	Direct (c') SRW	Total (c) SRW	Sobel Test (*p*)	Finding
9	Overall	0.019***	0.067***	0.084***	***	Supported
Validation	Forum 1	0.021***	0.060***	0.078***	***	Supported
Validation	Forum 2	0.019***	0.115***	0.106***	***	Mixed
Validation	Forum 3	0.166***	0.021***	0.191***	***	Supported
Validation	Post As	0.025***	0.104***	0.061***	***	Mixed
Validation	Post Bs	0.034***	0.093***	0.097***	***	Supported

SRW = Standardised Regression Weights p<.05*, p<0.1**, p<0.001***

Similarly, when testing the same for content variances, Post As (fact-based and direct) do not appear to encourage sceptics to value the information further, although the Sobel test indicates the presence of mediation. While the Post Bs indicated a partial mediation effect, the difference is marginal.

H_{10a+b} – Susceptibility to Influence

H9 was in response to the polarised debate on the 'Influentials hypothesis' (Watts and Dobbs, 2007), it was argued that those who are less susceptible to influence generally are still subject to perception change or to propagate a message if they find the information content of value. In order to test H10a and H10b, multigroup analysis was required and, in order to achieve this, two groups were set up in the SPSS data file: high and low susceptibility. These were calculated by identifying respondents whose overall mean score for the susceptibility to influence construct was at least one standard deviation higher or lower than the mean. These individuals were selected and assigned to their respective groups (n= 293 high / 298 low). The high and low susceptibility groups were then identified in the AMOS model and the procedure for multigroup moderation analysis as outlined by Byrne (2001) was employed.

This test has been used to establish the moderation effect in both hypotheses where it is relevant (H10 and H11). Tables 7.16 and 7.17 initially indicate whether the model itself is moderated by a particular construct. In the second row of each table, the

presence of a *p*-value <0.050 indicates that construct moderates the relationships at a model level. Without a significant result here, even the presence of a significant relationship at one or more path level is not deemed to indicate moderation.

If, moderation occurs at a *model* level, the table then goes on to indicate the presence of moderation at a *path* level; that is, the specific relationships between constructs that are subject to moderation. These are indicated in the rows where *p* is <0.050. Non-significant (N/S) results are shown for completeness and indicate which paths are not moderated. Thresholds are calculated using the procedure outlined by Weatherhead (2012) and summarised in Appendix H.

Table 7.16 - Results of Moderation Tests (H10)

Model Description	X^2	*df*	$\triangle X^2$	$\triangle df$	*p*
Combined baseline model (H and L Susceptibility)	3012.459	1590	-	-	0
Factor loadings and variances constrained to equal	3129.078	1639	116.619	49	0.000
Variance between Norms and Bel constrainted	3012.671	1591	0.212	1	N/S
Variance between Norms and Ident constrained	3012.484	1591	0.025	1	N/S
Variance between Ident and Bel Constrained	3014.786	1591	2.327	1	N/S
Variance between Ident and Inf Val Constrained	3012.671	1591	0.212	1	N/S
Variance bwetween Bel and Inf Val Constrained	3013.707	1591	1.248	1	N/S
Variance between Inf Val and Con constrained	3012.781	1591	0.322	1	N/S
Variance between Inf Val and Cog constrained	3012.459	1591	0.000	1	N/S
Variance between Ident and Con constrained	3012.487	1591	0.028	1	N/S
Variance between Ident and Cog constrained	3013.977	1591	1.518	1	N/S
Variance between NT and Con constrained	3019.796	1591	7.337	1	0.010
Variance between NT and Cog constrained	3014.241	1591	1.782	1	N/S
Variance between NT and Cog constrained	3014.241	1591	1.782	1	N/S

$\triangle X^2$ Difference in Chi-square, $\triangle f$ Difference in degrees of freedom

The above table indicates that, as suggested, susceptibility to influence moderates the dependent variables at the model level. However, it was hypothesised that susceptibility to influence was directed at the path between information value and the influence variable (highlighted in bold font). This is not the case, meaning that H10a and H10b are not supported.

However, it is noted that susceptibility moderates the path between Network Ties and the Conative dimension (p=0.010). It is noted that the scale focuses on the extent to which people ask friends for re-assurance or advice so this is a reasonable finding and worthy of further investigation in the future.

H_{11a+b} – *The role of content*

The need to understand differences between the nature of the message in the post is implicit in the research question itself. It is therefore necessary to investigate the role of content in the model, using the Post A and Post B samples from the survey. As outlined in Chapter 5, raters categorised Post A in each case as being direct and fact-based, while Post B was considered opinion-based and, generally, the language to be less direct. The following set of analyses focuses on any differences between these groups, through the process of moderation analysis, using multi-group analysis and following the procedure outlined in Byrne (2001).

H11 hypothesises that message content moderates the path between Information Value and the Conative and Cognitive dependent variables.

Table 7.17 - Results of Content Moderation Tests (H11)

Model Description	X^2	*df*	ΔX^2	d_f	*p*
Combined baseline model (Post A and B)	4699.300	1590			
Factor loadings and variances constrained to equal	4913.392	1639	214.092	49	0.000
Variance between Norms and Bel constrainted	4702.056	1591	2.756	1	N/S
Variance between Norms and Ident constrained	4699.700	1591	0.400	1	N/S
Variance between Ident and Bel Constrained	4699.310	1591	0.010	1	N/S
Variance between Ident and Inf Val Constrained	4699.826	1591	0.526	1	N/S
Variance bwetween Bel and Inf Val Constrained	4700.702	1591	1.402	1	N/S
Variance between Inf Val and Con constrained	4699.379	1591	0.079	1	N/S
Variance between Inf Val and Cog constrained	4699.569	1591	0.269	1	N/S
Variance between Ident and Con constrained	4708.795	1591	9.495	1	0.010
Variance between Ident and Cog constrained	4699.718	1591	0.418	1	N/S
Variance between NT and Con constrained	4707.894	1591	8.594	1	0.010
Variance between NT and Cog constrained	4702.096	1591	2.796	1	0.050

ΔX^2 Difference in Chi-square, Δf Difference in degrees of freedom

The content of the post moderates the model (p=0.000) although H11 has been incorrectly specified at the path level (both paths from Information Value to the Influence dimensions are non-significant).

However, it is interesting to note that other paths are moderated, some at a high level of confidence.

Evidently, the nature of the post makes a significant difference to the performance of the model, which was investigated further through analysis of the standardised regression weights and critical ratios in each model. However, the investigation of

this element is interesting and important in the way the posts are different to each other, where moderate variances are noticeable. The discussion in the next section will focus on this element.

H_{12} – Viral Progression can predict the presence of perception change.

In part, support for this hypothesis is found in the fit statistics which are outlined in Table 7.14. The specified model fits well, suggesting that the antecedents to both dependent variables are similar.

Further, the relationship between the two dependent variables must be established. In this case, the direct relationship is large: SRW: 0.484 p.0.000 CR: 21.674. These findings indicate support for the hypothesis: the evidence suggests that viral progression is a predictor of perception change.

Finally, three independent variables have specified relationships between themselves and both dependent variables. By establishing these paths, it is possible to evaluate any differences between the effects. These are outlined below:

Table 7.18 – Analysis of differences in paths.

IV	DV	SRW	p-value	CR
Identification	Conative	0.058	0.038	2.348
	Cognitive	0.047	0.046	1.994
	Variance	0.009 (16%)	-	-
Information Value	Conative	0.408	***	18.398
	Cognitive	0.216	***	8.388
	Variance	0.192 (47%)`	-	-
Network Ties	Conative	0.230	***	10.422
	Cognitive	0.056	0.006	2.772
	Variance	0.174 (67%)	-	-

This finding does not invalidate the claim for support of this hypothesis, as the aggregate effect of the independent variables support the overall model and the large relationship between the two dimensions of the dependent variables indicate a strong predictive capability.

However, the differences at the path level between the conative and cognitive dimensions suggest that the answer is more complex than conventional wisdom

suggests. This will be further discussed in the following chapters, but first it is necessary to investigate differences between the sources of the data to evaluate the extent to which the model can be considered to be generalizable.

7.4.3 Cross-case Analysis

In order to test the generalisability of the model across the different contexts, it was necessary to test each of the hypotheses using the sub-set of data collected from each forum. The procedure for completing these tests was using Multigroup Analysis, where each model was run using Group 1 as Forum 1 (digital photography forum), Group 2 as Forum 2 (student support) and Group 3 as Forum 3 (forces).

In general, the cross-case analysis suggests that each sub-set of the sample (that is, each forum) broadly conforms to the overall findings. Further, with only two notable exceptions, all hypotheses which relate to the main model are in line with the overall findings.

However, as suggested above, some differences are apparent: first, in the forces forum, the relationship between Identification and Information Value is different from the other forums and H4 is rejected in this case. Second, the size of the relationship between information value and both influence dimensions is considerably smaller in the student support forum. Finally, the effect size for network ties to the conative dimension is larger in both the student forum and forces forum than in the digital photography forum.

The findings in this section are primarily intended to indicate the applicability of the overall model in the population. On the basis of these results, the model can tentatively be deemed to be generalizable, although this conclusion is subject to various caveats and limitations which are explored in the following chapter.

The secondary purpose of the cross-case analysis is to establish a richness of understanding that would otherwise not be available if the only results considered were those of the overall sample. The implications of the differences in each forum and by post-type are considered in the following chapters.

Table 7.19 – Summary of findings by context

		Forum 1				Forum 2				Forum 3			
H		**SWR**	**CR**	***p***		**SWR**	**CR**	***p***		**SWR**	**CR**	***p***	
1	Conformity to norms positively affects identification	0.464	14.169	***	S	0.435	9.500	***	S	0.656	10.567	***	S
2	Conformity to norms positively affects believability	0.201	6.883	***	S	0.159	3.669	***	S	0.464	6.634	***	S
3	Identification positively affects believability	0.475	12.876	***	S	0.297	5.411	***	S	0.356	4.361	***	S
4	Identification positively affects information value.	0.150	4.288	***	S	0.128	2.741	0.006	S	0.016	0.247	N/S	R
5a	Identification increases likelihood to propagate.	0.009	0.264	N/S	R	0.069	1.467	N/S	R	0.091	1.340	N/S	R
5b	Identification increases perception change.	0.033	1.027	N/S	R	0.092	2.403	***	S	0.018	0.286	N/S	R
6a	Strong network ties increase likelihood to propagate.	0.167	5.892	***	S	0.179	7.107	0.016	S	0.313	5.362	***	S
6b	Strong network ties increase perception change.	0.073	2.730	0.006	S	0.005	0.142	N/S	R	0.063	1.113	N/S	R
7	Believability increases information value.	0.620	15.586	***	S	0.522	10.225	***	S	0.776	8.826	***	S
8a	Information value increases likelihood to propagate.	0.485	16.859	***	S	0.180	4.256	***	S	0.517	8.757	***	S
8b	Information value increases perception change.	0.261	7.059	***	S	0.110	2.826	0.005	S	0.018	5.424	***	S

Table 7.20 – Summary of Effects of Posts (Conative dimension of influence)

		Fact-Based Posts				Opinion-Based Posts			
H		**SWR**	**CR**	***p***	**S / R**	**SWR**	**CR**	***p***	**S / R**
1	Conformity to norms positively affects identification	0.421	12.257	***	S	0.467	15.184	***	S
2	Conformity to norms positively affects believability	0.110	3.648	***	S	0.220	7.535	***	S
3	Identification positively affects believability	0.456	11.229	***	S	0.376	12.268	***	S
4	Identification positively affects information value.	0.155	3.865	***	S	0.142	4.529	***	S
5a	Identification increases likelihood to propagate.	0.117	8.063	0.002	S	0.024	0.766	N/S	R
5b	Identification increases perception change.	0.034	5.234	N/S	R	0.052	1.832	0.067	S
6a	Strong network ties increase likelihood to propagate.	0.163	0.883	***	S	0.273	9.931	***	S
6b	Strong network ties increase perception change.	0.034	1.042	N/S	R	0.078	3.058	0.002	S
7	Believability increases information value.	0.617	15.115	***	S	0.594	16.714	***	S
8a	Information value increases likelihood to propagate.	0.372	11.829	***	S	0.420	15.205	***	S
8b	Information value increases perception change.	0.186	5.231	***	S	0.213	6.762	***	S

SWR = Standardised Regression Weights CR = Critical Ratio $p<.05$*, $p<0.1$**, $p<0.001$***

7.5 Formative Conclusion

This chapter starts with a discussion of potential risks to the validity of research studies such as the one in the present model, which, if avoided, have the potential to lead to generalizable research.

In order to identify that the model fits this description and is therefore of value in multiple contexts, the hypotheses findings would need to be consistent across forums. This has been discussed in this chapter, but is consolidated here for ease of consumption.

Table 7.26 indicates the acceptance or otherwise of the hypotheses in each context and Figures 7.2 and 7.3 indicate the strength of the relationships in the main model and their significance.

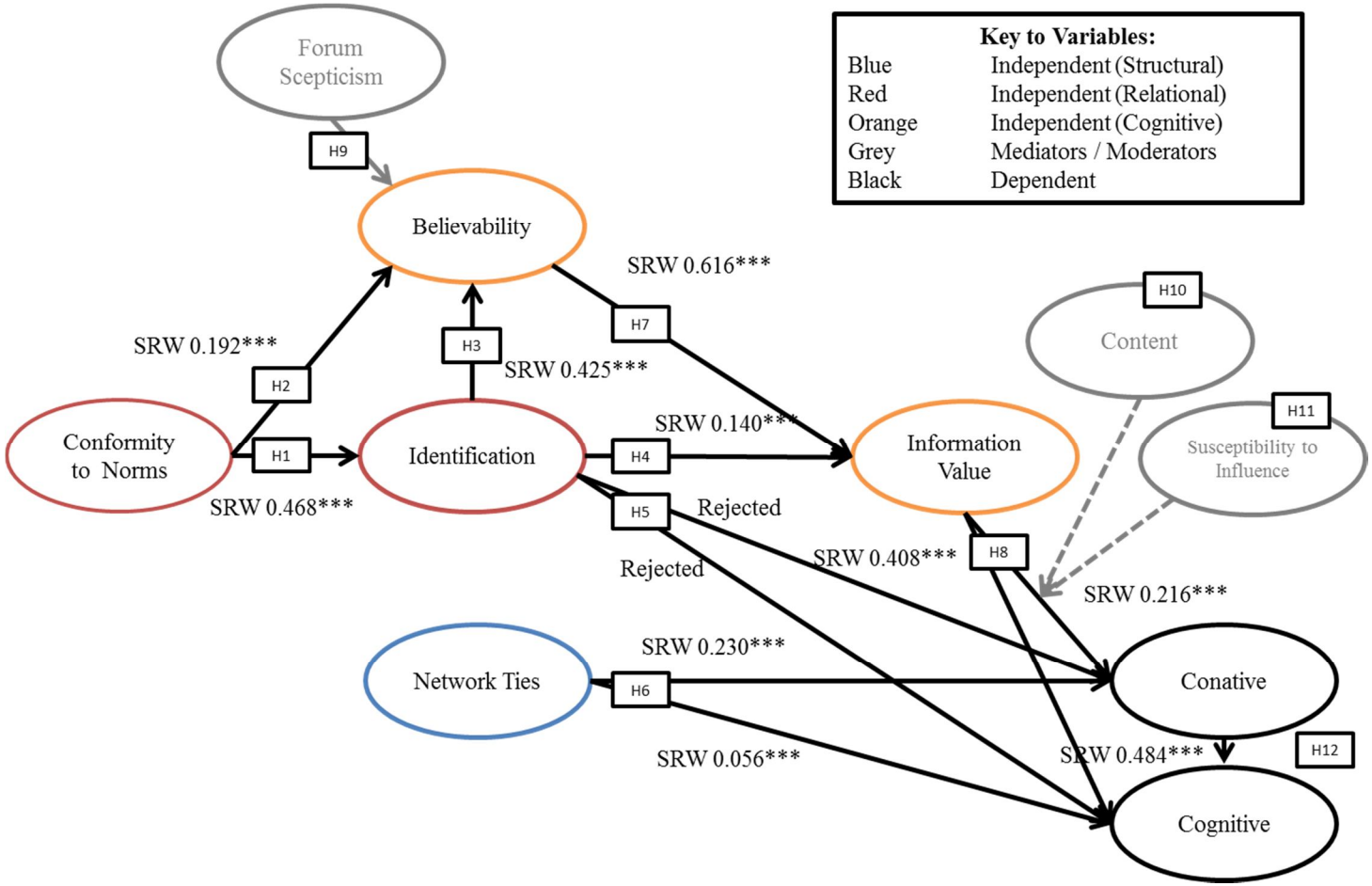
Given the similarity in both hypotheses support and size of relationship between the overall findings and the forum-based results, the model can be regarded as generalizable, subject to the limitations outlined Chapter 9. Therefore, the discussion in Chapter 8 will focus on the overall model and will address differences which occur between the forums by exception. Separately, variance between the informative and opinion-based posts is noted, which leads to further discussion, also covered in Chapter 8.

Table 7.21– Hypotheses Findings Summary

Hyp	Hypotheses (Summary)	Overall	1	2	3	Post A	Post B
1	Conformity to norms positively affects identification	S	S	S	S	S	S
2	Conformity to norms positively affects believability	S	S	S	S	S	S
3	Identification positively affects believability	S	S	S	S	S	S
4	Identification positively affects information value.	S	S	S	R	S	S
5a	Identification increases likelihood to propagate.	R	R	R	R	S	R
5b	Identification increases perception change.	R	R	S	R	R	S
6a	Strong network ties increase likelihood to propagate.	S	S	S	S	S	S
6b	Strong network ties increase perception change.	S	S	R	R	R	S
7	Believability increases information value.	S	S	S	S	S	S
8a	Information value increases likelihood to propagate.	S	S	S	S	S	S
8b	Information value increases perception change.	S	S	S	S	S	S

Figure 7.4 – Model including results

SWR = Standardised Regression Weights CR = Critical Ratio p<.05*, p<0.1**, p<0.001***



8 Discussion

The purpose of this chapter is to discuss the potential meanings and to interpret the statistics in order that sense can be made of them. The chapter is organised into four main sections: first, the overall model is discussed and its place in marketing and information theory is considered; second, each individual hypothesis is addressed and the relevant findings evaluated; third, the constructs are reflected upon and their place in the model is discussed. Finally, the limitations of the study are highlighted and their role in drawing robust conclusions from the study is considered.

For a summary of the hypotheses, their justification, results, discussion and discrete conclusions, this is available towards the end of this Chapter (Table 8.1)

The purpose of the study was to develop a generalizable model of influence in virtual communities. As discussed in the conclusion of Chapter 7, the fact that the model fits well and performs similarly in each of the forums allows the researcher to infer that, broadly, this objective has been achieved. The discussion focuses on the overall model and addresses differences between forums by exception and explores the boundaries of the generalisability of the model.

8.1 Overall Model Fit

In order to evaluate the effectiveness of a model, one must triangulate the statistical, theoretical and practical considerations; evaluation of fit coefficients alone is an inadequate method of describing the appropriateness of the model for describing phenomena (Sobel and Bohrnstedt, 1985). Byrne (2001) extends this argument: "Fit indexes yield information bearing only on the model's lack of fit. More importantly, they can in no way reflect the extent to which the model is plausible; this judgement rests solely on the shoulders of the researcher. Thus, assessment of model adequacy must be based on multiple criteria that take into account theoretical, statistical and practical considerations." (p88). The following sections address these factors in order that any conclusions are robust.

8.1.1 Evaluating the Statistical Fit

There are various methods of evaluating statistical fit and these have been discussed in detail in Chapter 7. In summary, using all recognised methods and thresholds, the model appears to be an adequate representation of the phenomenon.

8.1.2 Evaluating the Theoretical Fit

Firstly, the model was developed using appropriate theory drawn primarily from the marketing and social sciences literature. Social capital theory argues that individuals can develop resources in communities which can be exploited for personal gain (Lin, 2001). Sources of such resources are relational, structural and cognitive (Nahapiet and Ghoshal, 1998) and by measuring these, a researcher can expect to establish the nature of the social capital within the community. The model fit statistics suggest that the present study has captured the appropriate constructs and correctly specified their relationships. This allows the researcher to conclude that the social capital of a particular poster can be measured appropriately using the independent variables in the model. The inclusion of mediators and moderators caters for the need to apply controls to improve the predictive accuracy of the model. It is not an explicit aim of the study to produce a model which can predict an individual's social capital, but is a necessary by-product.

It is argued in Chapter 2 that social capital can be expended as influence, where the influential activity is purposive and uninvited. By measuring the sources of social capital and comparing them with the extent to which the 'owner' had exercised influence (measured in two dimensions) it has been possible to establish empirical support for this argument. In this regard, the theory tends to support the model and *vice versa*: the greater the combination of social capital sources, the more likely is the author to be able to encourage others to pass along a message and to have altered people's view of the subject in the process. It is important not to over-report this finding: the model does not explicitly measure social capital before and after the influence event, therefore no conclusion of expenditure can be drawn. However, evidence exists in this model that the two

are sufficiently strongly linked to be encouraged that this argument may have some validity.

Personal influence theory argues that certain individuals are able to change the perceptions, attitudes or behaviour of others (Katz and Lazarsfeld, 1955). Those individuals rely on their network location, personal traits, community participation and communication skills to achieve this (Katz, 1987). By measuring a range of constructs which, together, give a multi-dimensional picture of post and poster characteristics, it was expected that the model would indicate the extent to which these factors combine to predict the likelihood of a certain post to encourage others to pass it along or to engender perception change on the subject. The model presents a range of hypotheses which, in the main, are found to be supported, some with a large relationship being exhibited. The model strongly conforms to the expectations of personal influence theory, while bringing it up-to-date by testing it in social media.

8.1.3 Practical Considerations

The sample size, with responses gathered from a range of backgrounds and global participants suggest that a reasonably representative sample has been gathered. Hypotheses were validated in interviews with experts such as forum editors, prominent bloggers and social-media experts, so it was expected that evidence of support would be uncovered.

Returning to marketing theory in general and the social-media literature more specifically, it was expected that some degree of correspondence would be found between the models. This expectation was reflected in the fact that one structural model was specified for two outcomes which have been described as the two dimensions of influence: conative and cognitive. However, the extent to which the models were the same was unexpected, indicating a strong, clear and positive correlation between the two. This resemblance was evident in both the fit statistics and in the standardised regression weightings between the constructs: e-WOM theory suggests that similarity is to be expected between the viral progression of a message within a community and the expectation that it has changed the perception of others in the process. However, the match between

the two models is empirical evidence that this theory is strongly grounded in reality.

Two differences are noticeable: first is the relationship between the network tie and influence dimensions (SRW 0.230 conative and 0.056 for cognitive). This suggests that a person with whom the author shares a strong relationship are more ready to pass-along a message than they are to change their mind about the subject, based on this factor alone.

Second, a similar finding exists in the relationship between Information Value and Influence (SRW 0.408 conative and 0.216). While the variance in effect is smaller, the direction is the same as in the previous finding: that information value is more important in perception change than in likelihood to pass-along a message. These findings appear intuitive, but have not been featured in any prior study to this researcher's knowledge.

The practical, theoretical and statistical evidence supports the idea that the hypothesised models have a good degree of foundation in reality. Triangulation of these discussions leads to a positive indication of the success of the project. This is further supported by the general consistency of the models across all three forums from which participants were recruited, leading to the claim that the model is strongly supported and generalizable, subject to certain limitations. Given the robustness of the chosen theoretical foundations these findings were to be expected. These will be assessed in the next section, to be followed by a discussion on the conceptual framework and then the individual hypotheses and constructs which underpin the model.

8.2 Impacts on Social Capital and Personal Influence Theories

Given the evaluation of the specified model in the previous section, the model can be argued to effectively measure key elements of social capital and, as such, may be considered contextualised empirical evidence which contributes to the validation of Nahapiet and Ghoshal's (1998) theories on its sources.

A proposition was outlined in Chapter 3 which stated that social capital can be expended as personal influence in certain circumstances which were outlined. It

was outside the scope of the present study to fully test that proposition, but evidence is present which suggests that it is valid. Overall, the model indicates that those with greater social capital exert more influence. More specifically, it suggests that where a greater network tie exists and where longer-term, greater social capital can be inferred to also be present, behaviour is different between the two outcomes measured. While this cannot lead to a definitive conclusion that social capital is being expended, the variances provide sufficient indications to support the theory. Future research can continue this line of investigation, where experiments can be designed to measure social capital before and after 'influence events'.

According to Lin (2001), for social capital to exist, there needs to be a recognition by both parties that a social debt exists between them, which does not have to be explicit. Such recognition may also contribute to the reputation of the 'social creditor' within one or many networks. The differences in the behaviour of respondents between the conative and cognitive dimensions may be considered to offer support to this notion.

Social capital is considered a fungible resource, capable of being exchanged for resources of equivalent value (Coleman, 1999). However, one of the criticisms of it as a broad theory is that while it may make intuitive sense to many, it is difficult to operationalize (Adler, 2002; Portes and Landolt, 2000; Adam and Roncevic, 2003). The scales that were chosen were noted to be statistically valid and, in combination, can be judged to adequately measure social capital. To suggest that this study adequately solves the issue of measurement is to overstate the contribution, but it can perhaps be claimed to be a step towards this ambition.

The perception by members that reciprocity is a key norm of a particular community, (meaning that it can be relied upon) is an antecedent to the presence of trust (Misztal, 1996). A number of the elements of the model provide evidence that this exists within the communities tested in the present study. Most obvious is the part played by community norms in identifying authors as a credible source, noting the particular importance placed on this construct by the members of the armed forces community (Forum 3). Trust is considered by

prominent authors to be a proxy for social capital (Putnam, 1995; Keeley, 2007; World Bank, 2006). Arguably, the proxy effect may work in reverse, that is, the existence of social capital indicates the presence in community trust or in a simple recognition that a social debt will be paid (Lin, 2001). However tentative they may be, steps in the direction of an effective measure of social capital may also be considered a valuable contribution to this complex theoretical area.

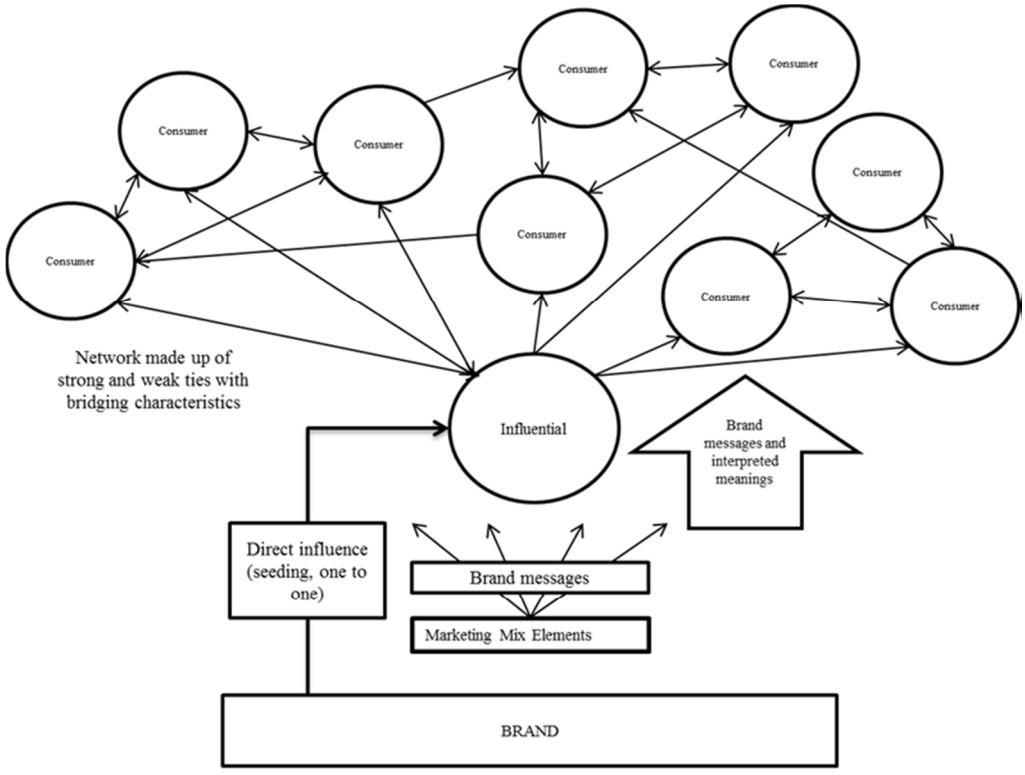
Evidence of the presence of 'community spirit', in the form of recognition of acceptance of community norms, high esteem of strong network ties and the value of information as a resource within the community is clear in all three forums. This is enhanced where the message was considered fact-based, rather than relying on the opinions of the author, which can be considered more evidence that members wish to enhance the worth of their particular community, perhaps recognising its importance in its overall environment. While the existence of 'community spirit' is not claimed here to be a strong indicator of the presence of social capital, it has been linked at a macro level by prominent theorists (Putnam, 1995; Fukuyama, 1995).

Specifically in relation to personal influence theory, there are two key areas for consideration. First, the differences in outcomes between those with strong network ties gives support to the argument by Katz and Lazarsfeld (1955) of the existence of the two step model, or at least the presence of the opinion-leader in a much more complex modern eco-system. Certain individuals may be able to sway the perceptions of others in their network and their reputation and relationship with them allows the message to propagate further. Further, and perhaps more pertinently, in the absence of a network tie, the virtual community allows readers of a message to evaluate data about authors' past history, upon which they can draw conclusions on their conformity to norms and identify them as a credible source. This, coupled with directly evidenced behaviour, such as the informational value and believability of their content, allows them to decide whether or not to accept their argument. This is clearly enhanced where the message is deemed to be fact-based rather than opinion-led.

The second point relates to the argument by Watts and Dodds (2007) that only access to a susceptible audience is required in order to influence. Evidence here supports the counter-argument by Cha et al (2010) that reality is more complex than first argued. The role played by other constructs as outlined in the previous paragraph underline the importance of the behaviour of the author rather than simply the access to the right audience.

In summary, the model tends to support the figure outlined in Chapter 2 and repeated here.

Figure 8.1 – Theoretical Model – Two-Step Communication Revisited



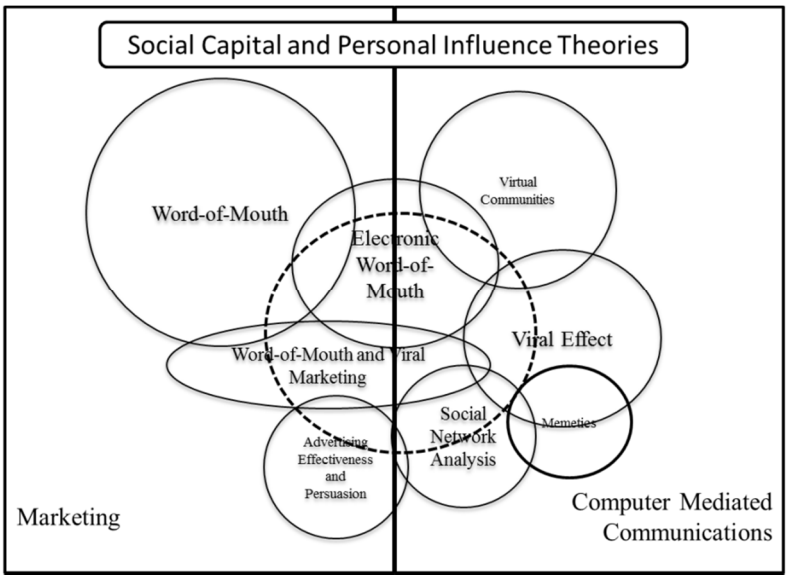
The theoretical framework was underpinned by three arguments: the first was that the sources of social capital as outlined by Nahapiet and Ghoshal (1998) are almost indistinguishable from the elements, which support the concept of opinion leadership (Katz, 1987). A second was that a core element of social capital theory is that it is fungible and can be expended in many forms (Dasgupta, 1995;

Fine, 2000). Third, that, dependent on circumstances, while an influencer may be able to generate social capital by providing useful advice to friends, it is also one of the ways in which social capital can be expended (Coleman, 1998; Burt, 1999). The study provides strong evidence in support of the first and sufficient confidence in the existence of others to warrant further investigation. Conclusions from this will be outlined in the following chapter.

8.3 Conceptual Framework - Word-of-Mouth

Chapter 3 examined the conceptual framework and assessed the current state of the literature on WOM. The following figure was developed to indicate the specific area that is relevant to the present study.

Figure 8.2 – Contribution to Literature



The study was anticipated to contribute conceptually to the area shown in the red circle: the interface between WOM, e-WOM, SNA, Advertising Effectiveness, VCs and Viral Marketing. Evidence uncovered contributes to this body of knowledge, in some cases supporting and in others providing contextual extensions to extant theories.

Keitzmann et al (2011) offer a comprehensive typology of the nature of social media, incorporating many of the constructs used in the present study. The intention has never been to validate their model, but some overlap is inevitable.

As well as offering empirical evidence of their categories, the findings herein suggest a degree of detail not present previously. For example, while "dialogue" is highlighted by Keitzmann et al (2011) as being an important factor, this tends to refer to both the presence of content (that is, whether the member is a lurker or participant) rather than to a qualitative evaluation of the nature of the dialogue. Here, the study offers clear evidence of the importance of the value of the information and the comparative analysis between post-types (fact- or opinion-based) that help understand this factor in a more detailed way.

Previous investigations into the nature of VCs have tended to focus on business model: for example, Porter (2004) offers five attributes which allow researchers and practitioners to categorise online communities and forums. Alternative approaches use a systems-based method to categorise VCs: for example focusing on whether communications were fully computer-mediated or mixed (Lee et al, 2003; Virnoche and Marx, 1997; Wilson and Peterson, 2002). The present study focuses more on the nature of communication within the community itself, identifying variation between different types of community, focusing on their population and interests.

Specifically, the present research offers support to Arguello et al (2006) who were interested in the reasons for members to be attracted to, participate in and stay with a particular community or online group. At a broad level, the study suggests that social capital measures conform to the conditions for participation; a group rich in active members offering valuable information and positive debate will create a feeling of community spirit which will attract others and encourage them to participate and remain. As well as offering a conceptual contribution to this area, this finding suggests strategies that could be employed by community managers to enhance their proposition, which, for those whose purpose is commercial could be valuable.

However, the study suggests that social capital measures alone are insufficient to fully understand the phenomenon. The models contribute additional established measures to supplement the sources of social capital: susceptibility to influence and scepticism of the forum generally add a dimension of personal dispensation.

The addition of tests to establish the effects of the nature of content indicates that certain types of communication make significant differences.

Chapter 3 offered strong empirical and theoretical support for the notion that VCs were important areas of the World Wide Web, offering opportunities for firms and institutions to explicitly or covertly influence members of their audience (Pitta and Fowler, 2005). This effect has been amplified recently with the inclusion of forum discussion threads in Internet searches, meaning that the content is considerably more widely available for a much greater time than previously thought (Weinber and Pehlivan, 2011). A greater understanding, then of the nature of content that is likely to become pervasive and to influence people's perception of the subject is important. The present study makes a contribution to this need: the nature of communication that is impactful is discussed in depth and the findings are a significant contextualised refinement on previous work in advertising effectiveness, where information value is not seen to hold such prominence (Heath and Feldwick, 2008).

In Chapter 3, a table was presented which categorised the nature of previous investigations into e-WOM generally and the viral effect more specifically. The conclusion was that while some studies focused on influence and the motivation to pass-along messages, social network analyses have dominated the landscape recently (e.g. Kitsak et al 2010; Lescovec et al, 2007). The case was made that while the latter were able to identify cascades, with one or two notable exceptions, no attempt was made to identify the behaviour of the authors in order to be able to predict the future instances. While the present study in itself cannot claim to plug this gap, if the findings were used in combination with SNA in the future, they could link author attributes and content to contagion analysis to create a powerful predictive capability. Referring to Kaplan and Haenlein's (2011) model, the model in the present study allows individuals, brands or institutions to exploit the opportunities for 'exponential growth' provided by social media which amplify the effect of traditional WOM to create viral marketing.

In summary, the study provides a new perspective on contagion related research where no unifying theme currently exists. Referring to the conclusions to the literature review in this document (see Fig 3.6), there was a need to contribute to three specific areas in the literature: first, validation was called for in testing the sources of social capital in a CMC context; second, both social capital and WOM are criticised for focusing on outcomes not causes; and, finally, it was argued that while SNA is useful for spotting the presence of an online cascade, it has generally been deficient in identifying the reasons why it has been caused. The following section attempts to draw conclusions on the extent to which the present study has contributed to those research gaps. In the meantime, the remainder of this chapter focuses on the discussion of the individual hypotheses and constructs.

8.4 Hypotheses

The following sub-sections discuss the findings outlined in Tables 7.2 and 7.3.

H_1: Conformity to norms increases identification.

Individuals who wish to develop social capital must ensure that they comply with the norms of the communities in which they participate (Nahapiet and Ghoshal, 1998). Norms and resultant behaviours vary between communities and are policed by the members themselves (Ashforth and Johnson, 2001; Wellman, 1999), so it was important to the study that the hypotheses were supported across all three forums.

H1 was supported in the overall model as well as in the three forums. Interestingly, a larger effect was noted in Forum 3 (army support forum), where, clearly, conformity to norms may be considered to be an important factor: the heuristic 'following the rules is right' is to be expected with this audience so the finding is conceptually supportable. However, it should be noted that the difference in effect size results in only a small overall increase, leading to the justifiable argument that the effect size (SRW=.468) in the whole sample is representative.

The nature of the post appears not to exert a major effect upon the perception of credibility, with values for the fact-based posts and the opinion-based ones being within a reasonable margin of the overall scores.

Ren et al (2007) concluded that communities where members share a common bond (for example the army forum) are likely to behave differently than those who share a part of their identity (for example a shared hobby like digital photography). This has been supported here in the role played by conformity to norms.

The relationship between these two constructs was theoretically justified by three arguments: (1) conformity to norms and identification of source credibility are operationalization of Nahpiet and Ghoshal's (1998) relational sources and therefore should logically exhibit a strong relationship; (2) Katz et al (1955) argue that evidence that one fits in with community practices and expectations should be expected to support the notion that one is a potentially valuable source of information and (3) conformity to norms is a necessary pre-requisite to reliable reciprocity which underpins trust (Misztal, 1996).

A large effect is noticeable across the whole sample and in the individual groups thereby supporting these arguments.

It was established in Chapter 3 that brands are participating in social media: engaging in discussions with members; promoting ideas; gathering information. While this is often carried out covertly, it is not the intention to add value to that activity due to the ethical and legal considerations. However, brands or their staff are often openly answering questions or providing information in forum discussions. This finding highlights the criticality of acting in accordance with the forum rules, expectations and norms, which may change from forum to forum. The difference in one of the forums in this study exhibits how important it is for brands to understand the specific norms of any community in which a brand engages. This finding is in common with rules related to advertising style and content, which, may conform to an overall integrated strategy, but is likely to vary subtly from channel to channel. Similarly, if brands wish to be regarded as

a credible source of information within specific communities, it is not enough to rely on the brand equity, but necessary to conform to the individual community norms.

> ***H_2: Conformity to norms increases the likelihood that messages will be believable.***

Where H1 addresses the effect Conformity to Norms exerts on the individual, H2 predicts a significant effect upon the reader's perception of the content of a particular message. If another member is considered to conform to the community norms in a reliable and consistent way, it is more likely that the message they post will be considered believable. This hypothesis is supported in the overall sample as well as in each forum.

In common with the results of H1, the members of Forum 3 place a greater degree of reliance on the perception that the author has complied with the norms of the community when deciding whether the posted content is believable. The effect size is more than double that of Forum 1 (digital photography) and three times that of Forum 2 (student support). This appears to be a reasonable finding: following rules is naturally important in members of the forces, whereas arguably rebellious actions may be forgiven more easily in a student context.

The difference between the student forum and the forces one raises a question on the overall findings, given the relative size of the response sets. The overall value is nearest to the Forum 1 (SWR = .192 vs .201) with the overall being slightly lower due to the relative weight of the sample size in the student forum compared with the forces one. Seemingly, then the values in the student context (SWR=.159) in comparison with the forces one (SWR = .464) have a balancing effect given the differences in sample size, where the forces is approximately one third that of the student forum.

At face value, the overall value may be considered representative of the whole, but caution should be noted on any firm conclusions on this element of the model. This will be reflected in the limitations and future research proposals should consider investigating this element further.

The opinion-based post appears to perform in line with the overall findings (SWR=.220), although the fact-based post is seen to exert a smaller effect on believability. Where the post is direct and fact-based, the poster's perceived conformity to community norms explains less effect. This appears to suggest that the facts tend to 'stand-alone' in respondents' minds: if authors are asking their readers to rely on their opinions to convince, the readers appear to rely more heavily on their perception of the authors' conformity to norms.

The relationship between these two constructs was justified on the basis that anyone wishing to convince others of their point of view in a forum must be able to address their content to comply with the rules of the particular community. There is evidence from the acceptance of this hypothesis to support this argument. It is acknowledged that the variance between forums presents a potential limitation to the extent to which the model can be claimed as generalizable due to relative sample sizes. However, the underlying principle of the hypothesis and its theoretical justification appears sound.

It was argued in Chapter 4 that two key factors are important when considering the inherent believability of a message: (1) the personal traits of the author or source; and; (2) that no communication will be totally believed in isolation (Maloney, 1963). The evidence of conformity to norms presented in this study provided evidence of both personal traits and prior communications. These form the basis of the respondents' judgement on whether the author of the post conforms to norms. The significance and size of the relationships here tend to support Maloney's (1963) argument.

The practical implications of this finding are similar to those outlined in the previous section: brands wishing to successfully engage with consumers in social media must establish that they are prepared to conform to community norms over the long-term, including amending content that demonstrates compliance.

H_3: Author Identification increases the likelihood that their message is believable.

The third hypothesis was justified on the basis that the identification of oneself within a group can be argued to affect the extent to which a post is to be believed. The source credibility scale which was utilised for the present study includes the perception that the individual is knowledgeable and holds a degree of expertise in the subject matter. The support of H3 is therefore not surprising and can be primarily seen as a confirmatory path which links the personal and post based considerations discussed in the previous sections.

Some differences are witnessed in the effect size: the digital photography forum members value source credibility more highly than the members of the student and forces communities (SWR = .475 vs .297 and .356 respectively). However, there are relatively large effects across all three. This again raises the slight concern over the sample size giving the digital photography members more sway than their counterparts in the other forums, but given that all the effect sizes are all quite large, this is not a major issue.

The nature of the post (fact-based vs opinion-based) does not appear to present a noteworthy effect on this path, with the relationship size being within a reasonable margin of the overall in both cases (SWR = .456 and .376 respectively). It is interesting to note that, while the difference is small, the direction of the variance is different to that which is evident in the previous relationship (conformity to norms to source credibility). In other words, while we may be less interested in conformity to norms when considering an informational post, we are more interested in the credibility of the source when considering the believability of the same post. According to Sternthal (1978) this may be due to the heuristic that a credible or expert source invites less counter-argument and informational posts are more inclined to be accepted as being able to justify the author's statements.

On a wider perspective, strong links were found in the literature that supported the hypothesised link between the credibility of the source and the believability

of the message (Berlo et al, 1969; Hung and Li, 2007). Further, 'competence based trust' (Levin and Cross, 2004) has been argued to be a key antecedent to information being accepted and embedded by the reader. The findings in the present study appear to provide further empirical support to the assertions made above.

These findings suggest that the identification of oneself in a group is an important factor in a message being believed. For brands wishing to identify themselves as valued members of the community who can be relied upon for believable and valuable information, it is important to establish these credentials. Sharing advance knowledge of product developments, insight into small details of use or other benefits other customers' get from a product would be examples of ways brands could achieve this kind of credibility.

H_4: Author Identification increases perception of information value.

Overall, a significant, albeit moderate relationship exists between identification and the extent to which the respondent values the information contained in the post. Overall, then, the hypothesis is supported.

The theoretical basis of this hypothesised relationship is from Hovland and Weiss (1951) who noted that the credibility of the source does not necessarily increase the receiver's likelihood to acquire or retain new knowledge. However, they concluded that someone who is able to identify themselves as holding certain expertise or knowledge is more likely to positively alter the perception of the information shared.

Given the nature of the theoretical underpinning, the size of the effect is smaller than expected. The nature of the information shared in the example posts was not necessarily considered by the researcher to be new knowledge *per se,* more that the information was built upon what would be reasonably regarded as existing knowledge. However, on reflection, even incremental information presented in this way could be regarded as new, which would explain the relatively small effect size in comparison with the findings of identification to believability and from there to information value. While this discussion does not

affect the conclusion on the hypothesis itself, future expectations of the size of this relationship will be reduced.

An interesting detail is evident at the forum level, which is worthy of discussion. The digital photography and student forum respondents gave results within +/- 10% of those of the whole sample, suggesting that their members exhibit broadly similar feelings on this relationship. However, the hypothesis was rejected from the forces respondents (non-significant relationship). While this was an unexpected finding, it may be explained in a similar way to the differences between this forum and the other respondents related to the conformity to norms construct. Seemingly, in general, 'following the rules' and immediate evidence of believability are more important to these respondents than an overall sense of credibility or knowledge. Further evidence of this point of view is discussed later where the believability to information value path result is discussed.

Given the conceptual reasoning outlined above, this is not considered to warrant an outright rejection of the hypothesis or to justify a refinement of the model. However, the contextual variance is important to note. Further, given the relatively small effect size in this path relationship, the overall integrity of the model is not compromised by this one non-significant finding. The hypothesis has been accepted overall.

Theoretically, the Hovland and Weiss (1953) assertion has been tested in a contemporary setting and been supported. More recently, in a qualitative study, Brown et al (2007) identified source credibility as a key antecedent to the perception of information value and these findings support the existence of this relationship. However, given that their model of the 'nomological context of a social network' showed this being the only path into information value (their dependent variable), the size of the relationship shown here does not support the single path shown by these researchers.

H_{5a}: Author Identification increases the likelihood that a message could be passed along.

H_{5b}: Author Identification increases the likelihood of perception change among the readers of a message.

It is clear from the overall results and in almost each contextual sub-group (forums) that the notion that the identification of oneself to a group as a credible source of information in itself is not a direct cause of influence, in either dimension tested. This was an unexpected finding given the strong theoretical support given by past research (Katz and Lazarsfeld, 1955; Keller and Berry, 2003; Assael, 1984).

However, it is very interesting to note that while both hypotheses were rejected in the case of the opinion-based posts, one was supported in the case of the fact-based posts. The interpretation of this finding is that, where respondents read a direct, fact-based post which relied on evidence to support its argument, they were more disposed to passing this information along, even if it did not change their own opinion of the subject. This, of course, could mean that the subject matter conformed to their own opinion before seeing the post, but is worthy of note. A similar phenomenon is noted later with regard to network ties and influence and validates the decision to measure the separate dimensions of the dependent variable.

H_{6a}: A strong network tie increases the likelihood of the receiver to propagate a message further within the network.

H_{6b}: A strong network tie increases the likelihood of perception change.

The measurement scale developed to test the strength of the network tie was inspired by Gilbert and Karahalios' (2009) model where the duration, frequency and structural elements of the relationship were tested with high prediction accuracy. These dimensions were based upon Granovetter's (1973) conception of the strength of network ties, which identify those network resources which can be used by members for personal gain. Nahapiet and Ghoshal (1998) also

adopted this theory as the key structural component of their proposed sources of social capital.

The hypothesised relationships between network ties and the dependent variables are significant, suggesting support of the hypothesis. Interestingly, though, this is the relationship where the greatest disparity between the two outcomes is reported: (SRW = .230 Conative and .056 Cognitive). So, the present model suggests that the network tie explains 23% of the variance in the likelihood of propagating the message within or outside of the community but less than 6% of the variance in perception of the subject as a result of the message. In other words, in general, we may contribute to the viral diffusion of a message even in some cases where the content does not alter our perception (e.g. helping the author convince others of our friend's argument).

This is an important factor: as is evident in Chapter 7, where one outcome exists (diffusion) the other (perception change) can be inferred to accompany it. However, the disparity in the findings in this path-level relationship suggests that a broad conclusion of this nature should be accompanied by a caveat that it is subject to controlling for the network tie. This may be an important theoretical and practical contribution to conventional wisdom that the viral effect necessarily equals a change in viewers' perceptions.

At a forum level, the digital photography respondents suggest that the explanatory value of the Network Tie construct is less effective (more than 20% below the overall value in both models). However, the pattern in the findings where the conative effect is much greater than in the cognitive path is similar to the other forums and to the overall trend. Therefore, this is not seen to affect the claim that the model appears generalizable, especially given the relatively large sample size in comparison with the other participating forums. The difference is even more pronounced in the other forums where H6b did not receive support in either Forum 2 or 3.

H_7: If a message is considered believable, the reader is more likely to consider the information contained in it to be valuable.

Believability is not a distinct element or inherent property of a message itself: it interacts with each consumer's prior perception or attitudes towards the subject (Maloney, 1963). For advertisers, it is important to regard believability as being linked to action: an advertisement which cannot be believe is unable to elicit the response which the firm wishes to achieve (Beltramini and Evans, 1985). Personal recommendations have been found to be the strongest source of believable information (Dembo et al, 1974; Day, 1971; Dichter, 1967). While an unbelievable message repeated often enough has been shown to become accepted and embedded (Hasson and Johnson-Laird, 2003) the nature of the example messages were not as important in this test as it was the perception of believability itself.

At the overall level, H7 was strongly supported (SRW = .616). This demonstrates clearly that believability is a key factor in the establishment of value. This was presented in an earlier chapter as: not all believable messages are valuable but a message will not be considered valuable if it is not believed. While this is clearly an oversimplification of the real case, the size of the relationship indicates that believability is a strong explanatory factor to the establishment of information value.

The forum level results tend to conform broadly to the overall, albeit with a significant uplift in the forces result compared with the student cohort. The sample size appears to equal out the relationship variance, meaning that the digital photography members' findings are very similar to the overall. While this is not ideal, it is not thought to materially affect the generalisability of this finding.

Further, the differences in this finding between the fact-based and opinion-based posts are within +/-10% of the overall findings. Consequently, this relationship is considered to be important in both cases. The informational posts showed a larger effect (SRW = .617 vs .594) which is to be expected, as the provision of

facts and justification gives the reader call to actively consider the content and meaning that believability may be more of a conscious consideration made in line with the establishment of perceived value.

Believability is argued to be an important factor to measure when establishing advertising effectiveness (Beltramini and Evans, 1985) and helps marketers understand the way people "derive meaning from information in advertisements" (Atkins and Beltramini, 2007: p171). These findings support the inclusion of believability when measuring brands' intervention in social media. Given the call for social media practitioners to learn from traditional marketing theory in order to develop more mature tactics and measurement techniques (Barwise and Meehan, 2010) the finding that the scale predicts information value at this kind of level in this context is a potentially impactful contribution.

Brands who wish to implement successful social media engagement programmes should ensure that language which would leave the consumer questioning the believability of claims may be best avoided: overblown product benefits or the use of hyperbole would be such examples.

> ***H_{8a}: Information that is perceived to be valuable is more likely to prompt the receiver to propagate the message further.***
>
> ***H_{8b}: Information that is perceived to be valuable is more likely to affect the receiver's perception of the subject.***

The respondents' perception of the value of the information shared in the example posts was hypethesised to be a direct factor in explaining influence in the models (H7a and H7b). Overall the effect was significant with both outcomes and with interesting effect sizes (SRW = .408 (Conative) and .216 (Cognitive)).

The aim was to measure the key components of information as proposed by Hirsleifer (1971): (1) uncertainty resolution; (2) applicability; (3) relevance. Another dimension relates to the nature of the content, which was captured in the factual vs opinion-based sample posts. Hirsleifer (1971) also proposed that the

ease of message distribution was a factor, but this was discounted in this context where every member of the communities has a theoretically equal chance of seeing the sample post. Nahapiet and Ghoshal (1998) see this construct as a key cognitive source of social capital and, further, Brown et al (2007) concluded that it was the primary antecedent to effective word-of-mouth transmission within social networks. These theories explain its prominence in the model and the results appear to support these arguments.

Between the outcomes, there is a notable disparity, which suggests that the value of information exerts a greater effect upon the likelihood of the recipient passing it along than upon their change of perception. This was to be expected, but is an interesting finding, especially when considered in tandem with a similar effect in the previously discussed relationship between the network tie and the dependent variables.

> ***H_9 – Believability partially mediates the relationship between forum scepticism and information value.***

The Forum Scepticism was included in the model in order to establish its role in the measurement of social media marketing effectiveness. Scepticism has been argued to be an important measure of advertising effectiveness in recent years (Obermiller and Spangenberg, 1998). The purpose was to establish the extent to which communication style should be altered to accommodate more sceptical audiences. The construct focuses on the respondents' general perception of the medium rather than of any other member or specific information. The hypothesis was based on a specific notion which has been found to be valid in the advertising context (Obermiller and Spangenberg, 1998). If one is pre-disposed to consider VCs to be a potentially good source of information and is then exposed to messages within a VC, which one considers to be believable, then the information is more likely to be considered of value. Full mediation was not expected as the significant relationship between Forum Scepticism and Information Value was not anticipated to dissolve on the inclusion of the Believability mediator.

Two tests were carried out: the Sobel Test (Sobel, 1986) identified evidence of mediation in all four contexts (overall and in each forum). Further, the Baron and Kenney (1986) procedure was carried out within the SEM model and, overall, evidence of partial mediation was clear, albeit that the effect was marginal (Standardised Indirect Regression Weight of .105 vs Standardised Direct Regression Weight 0.096). While this allows the hypothesis to be supported, the effect size is relatively small, meaning that few firm conclusions can be drawn from this finding.

However, at the forum level, the effects are mixed, making the finding more worthy of note. The effect in the forces and digital photography is much greater than the indirect effects, indicating the presence of a relatively strong partial mediation effect. However, no evidence of mediation is witnessed in the student support data, which is difficult to explain. The two major differences between the forum groups which may help to understand this finding are: age and content. Firstly, the student support cohort is much younger than the other two (Mean age of respondents: 46.5 Forum 1; 20.4 Forum 2; 43.1 Forum 3). Using Pransky's (1991) delineation, digital natives (those born after 1980) behave differently and have different expectations of online information resources than do digital immigrants (such as many of the respondents from the other two forums).

Secondly, as outlined in the relevant section, an inherent limitation of this type of survey is that data is collected from different groups and where context specific prompts are needed for the efficacy of the survey. These are necessary for the generalisability of the study, but incorporate a risk that differences may be observed which are not easily explained.

On balance, given the nature of the key variable (scepticism aimed at forum rather than content) it appears more feasible that the age of the respondents more adequately explains the differences.

H_{10a}: Susceptibility to Influence moderates the relationship between Information Value and their intention to propagate the message further, with more highly susceptible respondents being more likely to pass along.

H_{10b}: Susceptibility to Influence moderates the relationship between Information Value and their perception of the subject of the message, with more highly susceptible respondents being more likely to have their perception affected.

Broadly, H10 suggested that susceptibility to influence moderated the model, which was supported. However, more specifically, the hypothesis suggested that the moderation would manifest itself specifically in the path between Information Value and the Influence dimensions. In other words, respondents who were highly susceptible to personal influence would be more likely to be influenced by information they considered valuable than those who were not. Comparison of means between the high and low susceptibility groups on the Information Value construct indicate that the members of the 'high' group found the posts to be generally more valuable than those in the 'low' group (4.39 vs 3.83). However, this does not translate to the relationship between the information value construct and the influence dimensions where susceptibility does not moderate this path. This means that the hypothesis should be rejected, which is identified in the results in Chapter 7.

However, the path-level relationship between Network Tie and the Conative dimension was moderated at 99% confidence level. While this was unexpected, reflection of the scale indicates that the 'normative' dimension (which addresses the respondents' desire to engage with others when making decisions) is stronger than the 'informational' dimension (which had been the focus of the hypothesis).

The rejection of H10, suggesting that content moderates the relationship between information value and the influence dimensions, is an interesting finding. This underlines the importance of perceived value and that respondents did not distinguish between whether the information was based on fact or opinion.

H_{11a}: The content of the post moderates the relationship between Information Value and the conative dimension, with fact-based posts being more likely to prompt pass-along behaviour.

H_{11b}: The content of the post moderates the relationship between Information Value and the cognitive dimension, with fact-based posts being more likely to change the readers' perception of the subject.

H11 generally addresses the moderation role of message content at the model level and, specifically, in the relationship between the Forum Scepticism and Information Value path-level relationship. This is rejected with both dimensions of influence.

However, message content moderates the relationships between Network Ties and the Influence dimensions (95% confidence on Con and 99% on Cog). However, perusal of Tables in Chapter7 indicates that the statistics suggest a moderating role more broadly across the model, albeit outside the 95% confidence threshold. Consequently, the role message content plays has been discussed throughout this section.

Similarly to previous discussion related to H10, the rejection of H11further highlights the importance of perceived value and indicates that respondents did not distinguish between whether the information was based on fact or opinion.

H_{12}: Viral progression can predict the presence of perception change.

This hypothesis is arguably the core of the model. As outlined in Chapter 7, the primary evidence in support of this hypothesis is the overall model fit, which is compelling, particularly in a model of this complexity. Further, there is a strong, direct, significant relationship (SRW = .484 p.000) between the two dimensions indicating that, as held by conventional wisdom, the viral progression of an idea or message is correlated with a change in perceptions.

However, the analysis of this hypothesis was triangulated and the path level differences between the key antecedents (information value, network tie and identification) were noted. In two cases, considerable differences in the model

were noted. This suggests that blind faith in the capability of viral progression to predict perception change is unwarranted. The diffusion of a message can indicate the presence of perception change, but certain conditions need to be taken into account: as examples, identification and strength of the tie. If we were to witness a fact-based message receiving significant attention in a tightly bounded community, with many members referring to it or passing it along, we can reasonably question whether this was creating the same effect as in other cases.

This is an important finding. A general theme has developed amongst WOM theorists and researchers that information provided by a member of a community or other network is: (1) more likely to be influenced (Arndt, 1967; Day, 1971); (2) more likely to act on the recommendation or advice (Whyte, 1954) and; have their attitudes or perceptions changed (Engel, Kollat and Blackwell, 1968). This establishes the role of WOM (and its electronic relatives) as a powerful resource for firms or institutions wishing to influence people's choices. By no means does this result falsify this theory that WOM but it does provides depth to the understanding of the phenomenon by highlighting the differences between the two dimensions of influence.

Research which focuses specifically on opinion-leadership suggests that those with whom we hold a strong network tie are more likely to influence our decisions (Leonard-Barton, 1985). Similarly, this finding suggests that, while this is true, the effect is limited compared to their ability to encourage us to pass along their message. While we may be happy to contribute to others being influenced by them (by bringing their message to the attention of others in the community), we may be more guarded about having our minds changed ourselves.

8.5 Overview of Hypotheses Findings and Constructs

The following section discusses the constructs and their relative role in the model, taking into account multiple relationships and the factorised mean values for the overall construct, which helps to illustrate their relative importance, particularly when considering the differences in the post types. These paragraphs

move from general discussion and start to draw formative conclusions at an individual level. This leads, in turn, to the overall conclusions in Chapter 9, having first considered the limitations of the study.

8.5.1 Conformity to Norms

Conformity to norms was considered in the review of the literature to be an important foundation stone to the whole model. This was primarily due to the assertion from Misztal (1996) that reliable reciprocity is a key antecedent to the development of trust both of which are argued to be core components of community norms. The present study appears to support the argument, offering empirical support to this assertion: the relationships between this construct and both the development of Source Credibility in the eyes of the community ('person-centric') as well as contributing to Believability ('post-centric') confirms the underpinning effect it has on online influence.

Overall, the relationship between conformity to norms has a greater effect on the overall perception of the person than the content. This is interesting as it may be considered to be potentially longer-lasting: a post may be read and forgotten, but a judgement on the individual on the extent to which they are a credible source may be committed to memory. We may forget an individual review of our favourite band's latest CD, but our judgement of the author may alter our perception of his or her future work.

When considering the nature of the post, the authors of the fact-based posts (A) were considered generally to conform better to the community norms (Means: A = 5.70 and B = 4.85). Clearly no firm conclusions can be drawn from this finding as, while this is a construct that is focused on the person not the post, the information from which the respondents' conclusion of this was drawn, was a combination of the two. This being said, the same is true of the Identification of Source Credibility value, which, as can be seen below, is very similar.

8.5.2 Identification

One of the key works which supported the initial development of the conceptual model in the present study was that of Brown et al (2007) who presented a compelling case from their qualitative work of the role of Identification in the

development of information value, noting that this term and expertise were used interchangeably in their interviews. Through establishing the importance of Believability in this path-level relationship, the explanatory power of their model is arguably significantly increased.

Many of the prominent authors on opinion-leadership argue that source credibility is a key element with which an individual must identify themselves in order to change the opinions of others (Katz & Lazarsfeld, 1954; Katz, 1985). This model establishes that Identification is central to the model, being influenced strongly by Conformity to Norms and, in turn exerting a strong influence over Believability. However, unlike, Brown et al (2007), this study finds identification to have only a moderate effect upon Information Value directly.

Comparison of means for these constructs indicates that the Post A and Post B authors were considered equally credible (A = 4.77 and B = 4.68).

8.5.3 Believability

The theoretical basis for the inclusion of this construct in the model were the tests in various contexts of the use of Believability in the effectiveness of advertising and the extent to which this affects the respondents' processing and overall perception of the information shared. The conceptual model recognises that Believability is an important element in establishing the effectiveness of social media communication. This is true when measured in terms of the direct value of the information shared, but also for its role in overall influence.

An author who is seen to conform to the norms of the community has an effect on the extent to which the message is considered believable. However, a bigger effect is caused by the extent to which the source was considered credible and knowledgeable.

In terms of the type of content that was considered believable, fact-based (Post A) was considered somewhat more believable than the opinion-based posts (B) (A = 4.92 and B = 4.38). While the variation margin is not huge, this is to be

expected as the posts were generally chosen to be non-controversial or evocative in order to avoid bias in their selection.

8.5.4 Information Value

As hypothesised, the value perceived in the information presented is a particularly important factor in establishing influence in both dimensions tested. An original scale was developed from Hirsleifer's (1971) dimensions, testing uncertainty resolution, relevance and usefulness. These were supplemented with practical tests using informational and opinion-based posts. In comparing the fact-based posts with the opinion-based posts, the difference is considerable. Informative posts (A) were considered 25% more valuable than the opinion based ones (B). This result was reflected in the Believability (where there was also a marked difference in the two) in contrast to Source Credibility (where the authors of the two types of posts were considered equally credible).

The relative importance of this construct supports the assertion of Brown et al (2007) that information value is an important factor in the word-of-mouth propagation of messages. Further, the model in the present research helps to explain why this is the case and, in addition, gives a specific indication of its role in perception change.

The discipline of communicating within social media has become an important part of the marketing mix and there are calls for practitioners to develop and mature the techniques they use (Barwise and Meehan, 2010). This study suggests that the value of information shared in VCs should be considered to be valuable by members, if it is to be considered influential in consumers making product decisions or passing along the information (Morgan, 2004). Brands craft messages carefully for advertisements and direct marketing and the present study suggests that the similar care and rigour should be paid to the creation of WOMM. The present research suggests opportunities for practitioners to improve their ability to control messages as they progress through communities. Any 'seeded' information provided to known or suspected opinion-leaders should include information which could be considered valuable: for example, new usage ideas for products or pre-announcements of functional improvements.

This would allow the Influentials to pass-along this information, which, as well as propagating the positive brand message would also serve to develop the relationship between the brand and the opinion-leader by aiding them to enhance their own credibility as a source of 'privileged' information.

This is an important finding as it sheds light on consumers' perceptions related to the nature of information received and the likelihood to create share a message or idea. If companies are engaged in activities which are designed to encourage opinion-leaders or market mavens to make referrals that benefit their brand, this research suggests that the provision of information that will be perceived as valuable by the audience will significantly increase the chances that this will reach other members of the community. In other words, the content of messages from opinion-leaders can be prompted, thereby increasing the level of influence the brand themselves can exert in a community.

Understanding the progression of messages as they flow through communities is important if practitioners wish to engineer the speed, direction and tone as they move. The Two-Step Communication Model as first proposed by Katz and Lazarsfeld (1955) may appear simplistic in today's world of communication complexity with multiple platforms and thousands of brands each competing for a share of our attention. However, the present study suggests that there is merit in crafting messages in order to provide value to the reader if a message is to be passed along through the community. The network coproduction model (Kozinets, 2010) captures the multi-faceted nature of modern online communications as well as recognizing the role played by brands and influencers. The present research supports this model and the author's conclusion that brands' marketing messages are explained and evaluated by the opinion-leader thereby increasing the likelihood that it is better understood and more positively received by the less-involved audience members.

8.5.5 Network Tie

The strength of the network tie between the sender and receiver of a message is an important control variable when considering one of the most prominent findings in the present study. The model testing viral propagation of a message

is closely aligned to the one for perception change, supporting the notion that where one exists, the other can be assumed. However, the Network Tie relationship with both dependent variables is markedly different indicating that the predictive capability varies between the two outcomes.

This is not seen to affect the generalisability of the model but any conclusions must be made while taking these differences into account. While the model supports the idea at word-of-mouth diffusion predicts perception change, the network relationships should be controlled for in any resulting conclusion.

8.5.6 Forum Scepticism

This construct was included in the model in response to recent calls for social media marketing to evolve and mature by using traditional marketing techniques and disciplines (Barwise and Meehan, 2010). It is seen as an important tool in evaluating advertising effectiveness and has the potential to be the same in social media marketing management. The hypothesis is supported overall with interesting differences between the forum groups. It has been suggested in a previous section that this may be explained by age related differences, although no firm conclusion can be drawn from the evidence gathered in the present research.

8.5.7 Susceptibility to Influence

In recent years, contrasting findings from different SNA studies have variously suggested that having access to a susceptible audience is the only relevant factor in generating online influence (Watts and Dodds, 2007) or that other factors, such as sharing relevant information, are more important (Cha et al, 2011). The purpose of testing susceptibility as a moderating factor was to find some middle ground between these opposing positions. The rejection of the hypothesis would suggest that the relationship between the sender and receiver of the message is more important than the information that is shared.

8.5.8 Influence

Given the option of using pre-existing scales for identifying mavens, the notion of measuring the conative and cognitive dimensions of influence appears to have some merit. In the context of social media, the measurement of the two effects:

the intention to pass-along the message and the recognition of perception change are important elements which were critical to the success of the research project. While subtle differences are evident in the model, the identification of similarities supports the development of robust conclusions which have both theoretical and practical impact.

When considering the nature of the post content on influence overall, comparison of means suggests that the fact-based posts are more likely to encourage readers to pass along the message and to have altered their perception of the subject matter as a result of the message. The variance in mean scores is 19% in the conative model and 14% in the cognitive one. This adds weight to the argument that, in this context, informational messaging is more likely to influence perception and be passed along within and outside the community.

Table (8.1) summarises provides a summary of the hypotheses, findings, discussion and offers a discrete conclusion for each. Broader, more holistic conclusions are suggested in Chapter 9.

Table 8.1 – Summary of Hypotheses: Justification and Results

Justification	Hypothesis	Finding	Summary of Discussion	Discrete Conclusion
Suggests identification as information source (Katz & Lazarsfeld, 1955). Pre-requisite of reciprocity (Misztal, 1996)	Conformity to Norms positively affects identification H1	0.468*** Supported	Supported overall and in all three forums. Stronger support in F3 where conforming to the rules is important. No clear distinction between post types.	In order to be considered a credible source of information in a community, sustained participation is important, with behaviour that is seen to be consistent with group norms.
People more inclined to believe good community members (Wellman, 1999; Sassenberg, 2002)	Conformity to norms positively affects believability H2	0.192*** Supported	Supported overall and in all three forums. Stronger support in F3 where conforming to the rules is important. No major distinction between post types.	Readers of a message are aware of the author's credentials and use this to form a conclusion on the believability of the particular content.
Strong links established between identification as a credible source and believability (Berlo et al, 1969; Hung and Lee, 2007; Sternthal, 1978; Sobel, 1985).	Identification positively affects believability H3	0.425*** Supported	Supported overall and in all three forums. Slight disparity in relationship size, but large effects across all three (min .297) No major differences between post types.	Where an author is perceived to be identifiable as a credible source of information, their message is more likely to be considered believable by readers. This further supports the notion that sustained, consistent participation is key.
Identification invites less argument, is more convincing and considered more valuable (Sternthal et al, 1978; Hovland and Weiss, 1951; Buda and Zhang, 2000)	Identification positively affects information value. H4	0.140*** Supported	Overall, significant but moderate effect size. Accepted in F1 and F2 (similar effect sizes) but rejected in F3 (Forces). Links to bigger relationships in H1 and H2 – following the rules is more important.	While identification strongly affects believability, the effect is much less when considering the value. True of the commercial forums, but for groups where compliance to rules are important, these hold much greater sway. Key finding in relation to cyber-defence contexts.

Justification	Hypothesis	Finding	Summary of Discussion	Discrete Conclusion
Identification as a good source of information leads to opinion leadership (Katz and Lazarsfeld, 1955; Assael, 1984; Feick and Price, 1987).	Identification increases likelihood to propagate. H5a	0.058* Rejected	Both rejected overall. Surprising given the strong support suggested by the theorists. The only difference is that H5a was supported in the fact-based post, suggesting that credibility is important if expecting readers to pass along a fact-based message.	This appears to be a core element of personal influence theory which is falsified in this context. Identification should count for much in terms of direct influence, but appears to only do so when it is hand-in-hand with hard facts.
	Identification increases perception change. H5b	0.047* Rejected		
Strong network tie strongly linked with influence (Leonard-Barton, 1985; Rogers, 1963; Dichter, 1966)	Strong network ties increase likelihood to propagate. H6a	0.230*** Supported	Larger relationship between likelihood to propagate and cognitive change. Suggests we are more likely to pass along a message from someone we know well than have it change our own perceptions. More pronounced effect in F3 where H6b was not supported.	Suggests that a strong tie may be sufficient in many cases to encourage people to propagate a message even if it does not alter their own view. This could be because the view as similar in the first place (consistent with Granovetter).
	Strong network ties increase perception change. H6b	0.056*** Supported		
Strong support that believable messages are considered more informative and valuable (Berlo et al, 1969; Maloney, 1963).	Believability increases information value. H7	0.616*** Supported	Supported with large effects overall and in each of the forums (+/-10% variance). Similar values with both types of post.	Intuitive result, but necessary to test as part of the overall model. Interesting to note size of relationship and consistency across all contexts. Worth noting that not all believable messages are valuable, but the reverse is not true.

Justification	Hypothesis	Finding	Summary of Discussion	Discrete Conclusion
Information considered key in prompting purchase decisions and other behaviour (Brown et al, 2007; Pitta and Fowler, 2005, Ackerberg, 2001)	Information value increases likelihood to propagate. H8a	0.408*** Supported	Similar effects to H6 in same direction but with smaller effect. Less forum to forum variance than H6 though suggesting that information value is considered influential across the board although we will also pass along informative messages (self-presentation?)	Information value is important in both dimensions but more of a factor in propagation than perception change. This may be due to members wishing to enhance their online brand (pass on valuable information).
	Information value perception change. H8b	0.216*** Supported		
Recommended as a test for advertising effectiveness (Obermiller and Spangenberg, 1998) and adapted for VCs.	Mediating effect of believability H9	0.084 vs 0.067 Supported	Hypothesis supported but with marginal effect. Sceptical readers are slightly more likely to consider information valuable if believable but not much. Forum level provides additional insight.	Appears that the importance of testing believability in helping sceptics to overcome their concerns about online information is not warranted. Worthy of further investigation.
Designed to evaluate the SNA debate: accidental influencers (Watts, 2007) vs others where information value is important (Cha et al, 2010; Bhakshy et al, 2011).	Susceptibility to Influence moderates Inf Val to CogH10a	NS Rejected	Hypotheses were developed suggesting that Watts (2007) was correct that influencable audiences were more likely to pass along and have perception changed based on information. The model is moderated by influencability but not on this path. Partial agreement with Watts but also agreement with Cha and others that it is more complex.	While no firm conclusion can be drawn on the exact nature of the role influencability, it is clear that the notion that anyone can create a cascade irrespective of behaviour or content is falsified in this context. Consistent with Cha et al but contrary to Watts.
	Susceptibility to Influence moderates Inf Val to ConH10b	NS Rejected		

Justification	Hypothesis	Finding	Summary of Discussion	Discrete Conclusion
Follows persuasion literature which states that more information leads to greater influence where text is the primary medium (Perloff, 2003)	Content moderates the path from Inf Val to CogH11a	NS Rejected	Hypothesis suggests that fact-based posts are more likely to influence based on their perceived information value. Post As were generally considered more valuable but did not moderate the path. However, the table suggests a broader moderating role, indicating that generally the content is an important moderating factor.	The hypothesis is flawed at the path level, although at the model level receives support. Other tests (mean scores and model level tests) support this notion but further investigation is required for full understanding.
	Content moderates the path from Inf Val to CogH11b	NS Rejected		
Viral progression leads to influence (Wilson, 2005; Kirby and Marsden, 2006; Dobelle et al, 2005).	Viral progression (con) correlated to perception change (con) H12	Model Fit 0.484*** Supported	The capability for viral progression to indicate perception change is more complex than many suggest. Network tie, content and perceived information value all affect the likelihood to pass along vs change, for example we may contribute to a message progressing (and changing some people's minds) even if it didn't change ours	Primary conclusion of the model. Informs WOM theory and provides depth to understanding in this context. WOM and viral progression can influence but subject to controls.

8.6 Limitations

While, in general, the model is felt to be robust and valid, leading to generalizable results, there are a number of limitations which need to be taken into account before drawing any firm or overall conclusions.

First, it should be repeated that there is no inherent ambition in the study to measure social capital itself, although the sources of social capital act as a proxy for influence as argued in Chapter 2. As outlined in Table 4.2, while the researcher has attempted to capture the sources as well as possible, certain dimensions are imperfectly measured. While this is not considered to create a major limitation to the study itself, care needs to be taken not to overstate this element of it.

The most obvious is the differences between the samples from each forum. The gender of the samples is significantly skewed towards males (72% vs 28%) meaning that the results may be limited by the generally 'male' perspective. However, this is partially mitigated by research which shows that males are more likely than females to search for information online and, particularly, to post to online discussion forums (39% vs 27% of respondents to the OxIS Internet in the UK study) (Dutton and Gerber, 2011).

As highlighted in the earlier discussion, there is a disparity in ages between the forums. The mean and median ages for the whole sample (39 and 43 respectively) appear representative of Internet users in general (Dutton and Gerber, 2011). However, as would be expected, the respondents recruited from the student support forum are generally significantly younger than those who participated from the digital photography and forces forums (Mean of 20 vs 46 and 43). Inspection of the Median values (34 vs 49 and 46) suggest that while the student forum is skewed towards respondents in the early 20's, representation is also seen from the mature student population. This only partially mitigates the limitation and it would certainly be preferable to have had a more evenly distributed age range in order to claim full generalisability. Specifically, the

effect of this limitation is that the findings related to believability and its role in resolving forum scepticism are slightly obscured.

The third limitation related to participant recruitment is the disparity in response set between forum participants. The responses from the digital photography forum are larger than those from the student and forces forms by a factor of three and five respectively. This is due to two reasons: first, although the student and digital photography forums are similar in size, the digital photography site is designed with a common entry to the forum area, meaning that the link to the survey was visible to all participants as they navigated from the main site to the forum area. The student forum is designed with a range of approximately 20 interest areas, each of which has an entry point from the main site; the link was posted in the products and technology forum so not all members would have seen it. Second, the forces forum has many fewer members than the other two, so a smaller response was to be expected.

A purposive sampling technique was employed to find forums to support the study and, while a number of techniques were employed to minimise any bias in the recruitment, in a study such as this, the researcher is subject to outside influences, primarily, which editors will agree to support the study. From a personal perspective as well as to ensure the efficacy of the research study, it was important to recruit respondents from the 'real world'. In order to be representative of general Internet and, specifically, VC users, it was necessary to use publicly available forums. The rules of such forums preclude recruitment of survey participants without support, so the active participation as well as the permission of the editors was needed. While response-set size presents a limit to the generalisability of the findings and conclusions, the impacts have been discussed in this chapter in detail and their effects understood. Conclusions will take this into account and the researcher will be careful not to 'over-report' findings where the larger forum is felt to have unduly influenced the result.

While efforts were made to reduce bias in the categorisation of the sample posts which were used, the choice of fact-based versus opinion-based is inherently subjective. However, incorrect classification does not inherently affect the

generalisability or validity of the model itself, clearly. Any practical or theoretical recommendations about the type of communication that is more effective in VCs would need to be considered in relation to this limitation. However, indications in the results suggest that the categorisation was successful (for example, note the mean scores comparisons between believability and information value, where the fact-based scores suggest that the categorisation is correct).

In hindsight, the inclusion of a question which asks the respondents to rate their own view of the fact-based or opinion-based nature of the sample posts should have been considered, although there is a risk of creating a bias in the responses. There is no ideal solution to this and should be accepted as one of the inherent risks of this type of study.

A number of risks of non-response bias were discussed in Section 5.3.5. While these were not considered to generate a major risk to the validity or generalizability of the study, it was not possible, within the scope of the PhD project to completely eliminate this risk. Future experimental tests are proposed which should be able to validate the findings in the present study.

In general, the validation tests confirm that the measurement scales were successful, including the original ones which were developed as part of the study. However, from a conceptual point of view, the Structural source of social capital is incomplete: the personal and reciprocation aspects of the network tie are collected, but it is not possible in a single study to triangulate these with network location data. A supplementary SNA study would be required and this was outside the scope of the present research project and would have required resources that were outside the reach of the researcher in a PhD study. As highlighted in a previous section, the respondents who reported a close relationship with the poster would naturally be considered outliers, which had the potential of causing statistical issues. This was mitigated by the use of the Bollen-Stein bootstrapping technique which appears to have removed this potential limitation.

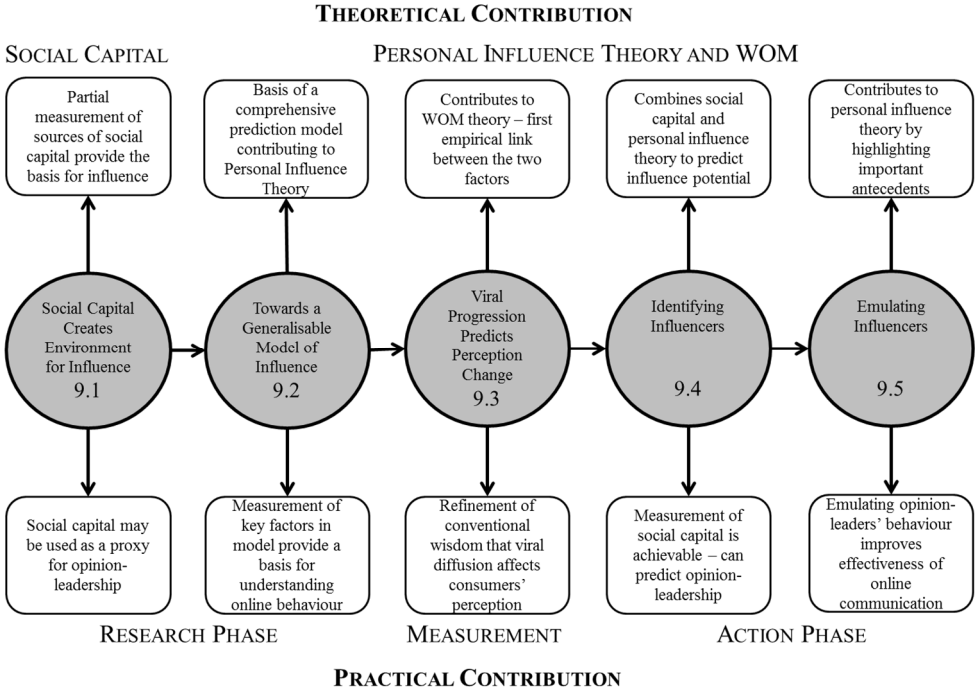
While methodological efficacy suggests that a single model is needed to establish a link between the two dimensions of the dependent variable, care should be taken not to interpret the findings such that either is considered a pre-requisite or automatic consequence of the other. The option was to create two models, which served to establish that the model of influence was remarkably similar in each case, but were unable to establish that the two outcomes were linked. The refined (single) model demonstrated a number of advantages over the two model option hence, the conclusion was to accept this limitation and ensure the conclusions take this into account.

The final limitation arguably pertains to any study of this nature: are all the relevant constructs and factors included? Due to the logistical limitations of a single research study, the focus has been placed on those factors, which, from the literature were concluded to exert the greatest influence. These have been found to be relevant in different contexts, although to the researcher's knowledge, this is the first time these have been grouped in this way. However, other explanatory factors may have been excluded and these may have exerted an influence on the outcome or may have interacted with existing constructs in a way that has not yet been predicted. Only further, on-going research can answer this question and suggestions for such studies has been outlined in the next chapter, along with the overall conclusions from the study and the practical and theoretical implications and contribution.

9 Conclusions and Implications

The primary purpose and value of the present research is in the development of theory, firstly making a contemporary contribution to social capital and personal influence theories within the context of social media and WOM. Further, the study proposes what may be considered a step towards a generalizable model of influence and outlines robust findings in support of it. This final chapter draws a number of conclusions and indicates their potential impact in terms of both theoretical and practical contribution.

Figure 9.1 – Summary of Conclusions and Contribution.



9.1 Social Capital Creates and Environment for Influence

In Chapter 2 an original proposition was presented: social capital can be expended as personal influence in certain conditions, specifically where the influence is uninvited and purposeful. While this was the theoretical basis of the study, this element of the project was exploratory and any indication that supported the proposition is considered acceptable. Evidence exists that there is a direct link between the sources of social capital and the two dimensions of influence that were measured is interesting and encouraging, particularly as it

takes a complementary and original perspective from previous discussion in this area (Burt, 1999).

One conclusion that may be tentatively drawn is that the sources of social capital are promising in the extent to which they measure the ability of the 'owner' exerting influence – the model indicates that those with greater social capital also showed evidence of a greater ability to entice others to pass along their messages as well as being able to change their perceptions of the subject.

There are two parts of the proposition that cannot be evidenced: first, whether social capital is expended as a result of the 'influence event': it is not possible to say from this study whether their store of social capital has been depleted as a result of their influence. Second, while one can consider the influence attempt to be uninvited (none of the posts was in response to a question) it cannot be clear whether the influence attempt was considered purposeful. In the future, a study could feasibly be designed to capture these additional elements, leading to robust evidence that social capital is expended in the way suggested.

The tentative conclusion that the presence of social capital contributes to its 'owner's' ability to exert influence is considered to be a contemporary contribution to social capital theory in the area of expenditure, which is generally under-researched in comparison with other elements of social capital theory. The practical perspectives of this conclusion will be discussed in later sections, but these rest on the concept that social capital may prospectively be used as a proxy for the *potential* to create influence.

9.2 Towards a Generalisable Model of Online Influence

The primary aim of the study was to create a generalizable model which predicts influence in VCs. The statement has been made previously in this thesis that this has been achieved. It is supported by three key findings: first; the specified model exceeds relevant measures of acceptable fit, which is particularly challenging given the complexity of the model itself. Second, a large sample was collected with data representing three popular, active forums; the model is remarkably similar across all three sources. While differences are apparent,

these have been argued not to affect the overall validity. Finally, the model was tested using two very different posts, which have been categorised as fact- or opinion-based; the model is generally very similar suggesting that it is valid in these circumstances.

However, to develop a fully generalizable model which comprehensively describes online influence is an ambitious objective. In the previous section the limitations of the study are evaluated and these give indications of the boundaries of the generalisability of the model, suggesting areas where it may be falsified in future research. For example, the gender bias in the sample suggests that a more balanced or female dominated sample may offer differences. However, the fact that the model is validated in the student support cohort (which was gender-balanced) suggests that this may not be a major risk.

Possibly the most likely criticism of the model in terms of its ambition towards generalisability is that a much larger study would be required in order to describe such a wide-ranging and important subject. Clearly there is a limit to the resources available to a single study as part of a PhD project, but this may be regarded as a starting point. In future studies, as suggested in a later section of this chapter, different techniques can supplement those used in this project to analyse a much bigger data set which investigates a broader set of constructs.

In conclusion on the subject of generalisability, this has been described in the title as 'towards a generalizable model', which is intended to suggest that the key concepts have been captured and form the basis of understanding of the phenomenon. It is hoped that the model will inform future studies and enhance both academic and practitioner understanding of both online and offline influence.

9.3 Viral Progression Predicts Perception Change

Many empirical studies focus on the progression of messages or 'memes' through online communities and networks (Watts and Dodds, 2007; Cha et al, 2010; Lascovech et al, 2011). Further, many theoretical and empirical papers discuss the effects of persuasive techniques upon the attitudes and perceptions of

readers of messages (Petty and Cacioppo, 1984; Heath and Nairn, 2005; Dobele et al, 2006). Conventional wisdom in marketing practice is that if an online message achieves 'viral' status or a Twitter hashtag 'trends', perceptions are assumed to be affected. This is also a core principle of WOM (Day, 1971). However, as has been previously established; the relationship between 'pass-along' behaviour and perception change has been under-researched.

The primary conclusion of the present research is that, broadly, a model has been established which explains and predicts two dimensions of influence: the likelihood for a reader of a message to pass it along and; the extent to which the readers believe they have changed their perception of the topic of the message. This was the primary aim of the study.

However, the level to which the effects on the dimensions of the dependent variable differ offers a secondary conclusion: that the progression of a message accurately predicts perception change. Further, the model indicates control factors which should be taken into account when attempting to operationalize the model: (1) that the effect of the existence of network ties can vary behaviour is different and must be allowed for; (2) the readers' scepticism for the medium itself plays an important role in overall influence and; (3) that the nature of the post exerts a differential effect.

From a theoretical perspective, this conclusion contributes to the body of knowledge in a number of areas. Social network analysis (SNA) has been critiqued in this thesis as being somewhat one-dimensional; it offers a description of the effects of cascades based upon peer-to-peer transmission but is not able to offer an explanation for their causes. Further, SNA is unable to predict the behaviours or characteristics which, in combination, contribute to the creation of the cascades. It is felt that the development of a generalizable model of this type will be able to complement SNA studies and provide a further explanatory dimension to their finding. However, if one accepts the findings in the present study, the results of SNA studies are explained. Where the model in this study offers explanation of the causes, a complementary SNA study can accurately assess the effects. This notion is the basis of the future research direction.

For practitioners, the benefits of this conclusion are important. Perception change is challenging to measure, requiring firms or organisations to engage with receivers of messages and test their attitudes as a result of a particular intervention, for example an advertisement or other communication. However, as identified above, the measurement of the progression of messages in social networks is relatively simple, requiring access to network logs or to commercially available influence statistics.

The limits to this conclusion are important: not all viral progression is the same. According to the online influence tracking firm, Klout®, at the time of writing, the Canadian pop star, Justin Bieber has the ideal influence score (100) meaning that when he (or, more realistically his social media team) publish a 'tweet', his followers (22.8m at the time of writing) react and are likely to be influenced by his point-of-view or recommendations. It is important to remember that the model in the present study was designed to cater for the ordinary person-in-the-street – the 'citizen influencer' - and is very focused on viral progression as a result of content as well as personal relationships. This is in line with personal-influence theory, which is distinguished from celebrity influence. So, the model is not intended to describe the result of all viral effects, but where such items as celebrity (or notoriety), political influence or dramatic current events can be eliminated, it is intended to contribute to practitioner understanding.

9.4 Identifying Influencers

In the same way that the measurement of social capital has been able to identify the existence of outcomes such as community trust, peer-pressure and elitism, it is concluded here that its measurement allows researchers to identify members of a community who have the potential to influence. By establishing an individual's score in the independent variables, while controlling for items such as susceptibility to influence and forum scepticism, their ability to alter the perception of others can be robustly predicted.

This is an important distinction from being able to predict their influence by the nature of any cascades they may be able to generate as, clearly the measurement of the potential to influence excludes the key element of the extent to which they

exert this power. In other words, while SNA may be able to spot those who are creating cascades in online networks, there are (potentially many) others who have equal capability to achieve the same but are not yet exerting their power. For brands wishing to use influencers as part of a marketing strategy to exploit word-of-mouth, these may represent an untapped resource, who, with the right motivation and prompts may become new brand ambassadors.

There are, however, many other reasons to try to identify influencers without trying to engage them. For firms wishing to tap the wealth of ideas within social networks and harness them in their innovation programme, to be able to identify 'lead users' (von Hippel, 1986). By noting how they are perceived in their communities, the model offers great potential.

These cases focus on brands that have access to public indications of influence (for example statistics on re-tweets and shares etc.). However, some applications are more covert: from a cyber-defence perspective, identifying those individuals who have the potential to influence or are actually exploiting their network resources to change people's perspectives is important and has to be done in the absence of any of the tools a brand has at its disposal. By understanding people's perception of a combination of an individual's posts and personal characteristics, the potential for influence may be identified.

This is an extension of the Influentials theory which was first presented in the 1950s. Where Elieu Katz and Paul Lazarsfeld's team spoke to 800 individuals to establish the housewives in Decatur who were able to change the opinions and then compared personal traits and behaviours to come to common conclusions. The present study offers a contemporary method of applying their original theory.

However, merely identifying those who have the ability to influence (whether or not they are exploiting that potential) has limited benefit. The final conclusion addresses the way in which the model can be operationalized.

9.5 Emulating Influentials

If a brand can establish that certain behaviours can lead to both the diffusion of their message and that, by the same mechanism, other people's minds will be changed then, by emulating those same behaviours they can reap benefits. However, this is not a short-term, quick-win strategy; it requires significant commitment and consistent behaviour on their part.

In short, the model suggests that in order to exert influence in VCs, an individual must: (1) establish themselves as a long-term member who conforms to group norms; (2) consistently present a persona that would be regarded as credible and knowledgeable; (3) information should be shared and presented in a way that is valuable to the community; (4) language or claims which may risk such information being presented in a way that is believable should be avoided.

These conclusions contribute to word-of-mouth theory and practice jointly by proposing actionable recommendations which can be employed to increase the presence and influence of an individual or, feasibly, representatives of a particular brand. Theoretically, this underpins the recent assertion of Barwise and Meehan (2010) suggesting that involvement in social media must be a long-term, professional commitment which draws on traditional marketing theory.

In addition to establishing the effects of a primary set of constructs, the present research has identified a number of controls which have been tested in the form of mediators and moderators. In the case of establishing the behaviour of sceptics in relation to VCs, the present research has broadly supported findings of tests conducted in the context of advertising: sceptical members are more difficult to convince of the value of information from the forum source.

Further, it was found that the extent to which the message is considered believable mitigates an individual's own scepticism. If sceptics tended to believe a message, the extent to which they found the information valuable was increased in the case of both Post A and Post B. This finding is line with previous tests on the evaluation of advertisements. However, in comparison with these studies, the effect is appreciably smaller, which may be due to the

members' involvement with the forum and their role in developing and policing norms within the community itself. This is markedly different from advertising, where communication is one-way from the brand to the consumer and does not include a 'membership' element.

However, the next conclusion is contrary to extant literature in the advertising context: the informational post appeared to reassure the sceptical users. In trying to understanding this nuance, the literature in word-of-mouth provides a solution: information about products is often considered more trustworthy and less biased when received through WOM, than that received from the firm (Day, 1969). It is suggested that this may explain why the effect between the two is relatively small.

Both sample posts in our test were judged by the respondents to be broadly equal in terms of believability, yet the post which was interpreted as using a direct style of communication, where any claims were justified was judged to be considerably more valuable in terms of the information provided. It is suggested that this may be a result of members being more pre-disposed to trust the direct provision of information in this forum or perhaps it is the presence of a mechanism for them to present a counter argument that contributes to this effect.

9.6 Future Research Directions

This section is in two parts: first, a broad overview of the research needs that are suggested by the present research project and; second, Table 9.1 highlights the individual projects which would lead to their successful execution.

9.6.1 Research Area, Gap and Importance

There are two primary areas in which the research has a contribution to make: (1) the field of innovation and: (2) the management of social media information. Of particular interest is the way in which lead users develop their reputation and become influential in social media, thereby being recognised by businesses as potential contributors to their innovation pipeline.

Academic endeavour in management has focused on two areas of social media analysis: on one hand a number of qualitative studies focus on forces at a macro

level and, on the other, a range of researchers investigate the network effects of individual interactions at a node level.

This leaves an important gap between these two extremes. Individuals' attitudes, motivations and the ways these manifest themselves as transactional behaviours have been largely ignored. Greater understanding of these phenomena will allow academics to guide practitioners in developing effective skills and mature tactics.

9.6.2 Theoretical and Practical Perspectives

As social media moves from the novel to the more mature phases of its development, there is an opportunity to apply extant theory in order to develop its progression. In turn, this provides a chance to explore the limits of these theories in this context.

Primary research gathered in the present research indicates that large organisations recognise the huge value that exists in online discussion forums: feedback on product pros and cons; innovation ideas; and unexplored gaps in the market. However, firms do not yet know how to exploit the medium due to the huge volumes of data. While there are a number of different ways this work could contribute to practitioner effectiveness, helping to solve this dilemma would be a major contribution.

Research Overview	Methods	Theoretical Contribution / Impact
Online Influence Validation of influence model developed in the present research. This research is in two phases: (1) experimentation and; (2) 'real world' tests using forum 'sock puppets' (fake profiles) to link people to information where I can analyse responses.	Experimentation, manipulating variables such as profile and content details in order to establish their relative effects in generating responses and attitude change.	Adds to the body of knowledge on Personal Influence theory and Information theory. Particularly with the extent to which online user generated content affects perceptions and attitudes.
Online Influence 'Real world' phase outlined above will involve an innovation element (i.e. will focus on new product ideas) and on identifying 'lead users' for innovation planning. Manipulated posts will point to content where 'links' can be measured. Also, with the right forum relationships, access 'in-forum' cascades following the spread of ideas within the forum itself.	Linked to experiments from above SNA identify variable diffusion of messages dependent upon content and other variables.	Following the effect of manipulated variables in SNA has not previously been done in any published SNA work. The aim would be to develop a generalisable model / algorithm for online influence.
Social Capital Expended as Influence It has been argued here that social capital can be expended as uninvited, purposive influence. Experiments can be developed which are able to test this theoretical contribution. Social capital can be measured before and after a 'real world' attempt to influence. A reduction would provide empirical support to this argument.	Mixed methods study including qualitative, quantitative research including SEM, experimentation and SNA.	The context of this study will be the role of lead-users in innovation and how they can establish themselves as a good source of innovation ideas. Reverses the thinking on market mavens who have previously been thought of as diffusion tools.

9.7 Final Conclusion

The aim of the study was to identify the post and personal factors which affect an individual's influence in VCs and it can be argued that this has been fulfilled. Significant theoretical contributions have been discussed, not least those being extensions to important social science theories: social capital and personal influence theory. In addition, contributions have been made to social media and word-of-mouth theories. The practical implications of these contributions have been discussed in detail.

-- End –

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Appendix A – Descriptive Statistics (Pre- and Post- Mean Replacement)

Descriptive Statistics – Conformity to Norms

Please state the extent to which you agree with the following statements.	N	Minimum	Maximum	Mean	sd
How do you view the person who wrote this post?					
Is a very active poster in this community.	1926	1	7	5.51	1.509
Is a long-term member of the community.	1924	1	7	5.39	1.748
Appears to fit in with the community.	1924	1	7	5.20	1.414
Appears to behave in the way the community expects.	1924	1	7	5.20	1.441
Valid N (listwise)	1924				

Descriptive Statistics - Identification

How would you rate the person who wrote the post?	N	Minimum	Maximum	Mean	sd
Kind : Cruel	1926	1	7	3.34	1.176
Safe : Dangerous	1912	1	7	3.19	1.184
Friendly : Unfriendly	1924	1	7	3.26	1.272
Just : Unjust	1910	1	7	3.29	1.154
Honest : Dishonest	1921	1	7	3.01	1.206
Aggressive : Meek	1912	1	7	3.73	1.157
Emphatic : Hesitant	1910	1	7	3.28	1.100
Bold : Timid	1910	1	7	3.11	1.058
Active : Passive	1918	1	7	2.83	1.137
Energetic : Tired	1906	1	7	3.21	1.069
Trained : Untrained	1908	1	7	3.39	1.170
Experienced : Inexperienced	1919	1	7	3.11	1.252
Qualified : Unqualified	1915	1	7	3.38	1.178
Skilled : Unskilled	1913	1	7	3.34	1.139
Informed : Uninformed	1924	1	7	3.03	1.330
Is an expert buyer : Is a novice buyer	1915	1	7	3.58	1.096
Knows very much about cameras : Knows very little about cameras	1914	1	7	3.26	1.312
I believe that the person who wrote the post...					
…thinks like me.	1924	1	7	4.06	1.513
…shares my values.	1925	1	7	4.10	1.426
…is like me.	1924	1	7	3.59	1.393
…treats people like I do.	1926	1	7	4.01	1.394
…is similar to me.	1910	1	7	3.72	1.372
…behaves like me.	1910	1	7	3.69	1.405
…has thoughts and ideas that are similar to mine.	1912	1	7	4.07	1.468

Descriptive Statistics - Identification

How would you rate the person who wrote the post?	N	Minimum	Maximum	Mean	sd
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…has thoughts and ideas that are similar to mine.	1912	1	7	4.07	1.468
Valid N (listwise)	1896				

Descriptive Statistics – Network Tie

Prior to completing this survey:	N	Minimum	Maximum	Mean	sd
How close was your relationship with this poster?	1970	1	7	1.23	.946
How often do you communicate with this poster?	1969	1	7	1.13	.630
To what extent do you typically interact with this poster?	1967	1	7	1.21	.770
How often have you traded favours with this poster (eg supported each other's arguments, shared information)	1968	1	7	1.14	.638
Valid N (listwise)	1965				

Descriptive Statistics - Believability

I find the content of the post to be:	N	Minimum	Maximum	Mean	sd
Believable : Unbelievable	1950	1	7	2.97	1.396
Trustworthy : Untrustworthy	1953	1	7	3.23	1.365
Not convincing : Convincing	1948	1	7	4.56	1.478
Not credible : Credible	1951	1	7	4.66	1.357
Unreasonable : Reasonable	1947	1	7	4.87	1.349
Dishonest : Honest	1947	1	7	5.00	1.250
Questionable : Unquestionable	1949	1	7	4.00	1.346
Inconclusive : Conclusive	1938	1	7	4.07	1.478
Authentic : Authentic	1944	1	7	4.72	1.346
Unlikely : Likely	1945	1	7	4.69	1.344
Valid N (listwise)	1925				

Descriptive Statistics – Information Value

Please state the extent to which you agree or disagree with the following statements	N	Minimum	Maximum	Mean	sd
The information is useful to me now.	1969	1	7	3.26	1.727
I could easily find this information elsewhere.	1967	1	7	4.49	1.514
The information will be useful to me in the future.	1968	1	7	3.46	1.721
I think the post makes some good suggestions.	1968	1	7	4.35	1.598
I think the post contains valuable ideas.	1969	1	7	4.42	1.542
Valid N (listwise)	1966				

Descriptive Statistics – Forum Scepticism

What is your view of on-line communities (for example [name of forum])?-	N	Minimum	Maximum	Mean	sd
We can depend on getting the truth in on-line forums.	1969	1	7	4.19	1.626
The aim of posts in on-line forums is to inform other members.	1969	1	7	4.90	1.491
Posts in on-line forums are generally informative.	1967	1	7	5.02	1.447
On-line forums are generally truthful.	1969	1	7	4.51	1.482
On-line forums are a reliable source of information.	1967	1	7	4.44	1.521
On-line posts are truth well told.	1967	1	7	3.77	1.431
In general, posts in on-line forums present a true picture of any product mentioned.	1967	1	7	3.93	1.480
I feel I've been accurately informed after viewing posts in on-line forums.	1968	1	7	4.55	1.457
Valid N (listwise)	1964				

Descriptive Statistics – Susceptibility to Influence

Please state the extent to which you agree with the following statements.-	N	Minimum	Maximum	Mean	sd
I rarely purchase the latest fashion styles until I am sure my friends approve of them.	1967	1	7	2.50	1.511
It is important that others like the products and brands that I buy.	1967	1	7	2.42	1.528
When buying products, I generally purchase those brands that I think others will approve of.	1966	1	7	2.34	1.492
I often identify with other people by purchasing the same products and brands they purchase.	1965	1	7	2.53	1.587
To make sure I buy the right product or brand, I often observe what others are buying or using.	1967	1	7	3.25	1.784
If I have little experience with a product, I often ask my friends about it.	1966	1	7	4.55	1.626
I often consult other people to choose the best alternative available from a product class.	1967	1	7	4.47	1.620
I frequently gather information from friends or family about a product before I buy.	1967	1	7	4.20	1.715
Valid N (listwise)	1963				

Descriptive Statistics - Influence

This post has changed my...	N	Minimum	Maximum	Mean	sd
...opinion on the product / service.	1967	1	7	2.96	1.491
…belief in the product / service.	1964	1	7	2.95	1.460
…future intentions.	1967	1	7	2.89	1.489
…attitudes towards the product / service.	1966	1	7	3.00	1.506
…likely future behaviour.	1967	1	7	2.92	1.516
I am likely to...	1968	1	7	2.35	1.406
...refer to this in my own posts.					
...tell others about this post.	1970	1	7	2.42	1.486
…share this post or forward it to others.	1969	1	7	2.34	1.444
To what extent have you been influenced by this post?	1970	1	7	2.12	1.528
Valid N (listwise)	1960				

Descriptive Statistics – Variables after Mean Replacement

	N	Minimum	Maximum	Mean	sd
SMEAN(CN1)	1970	1.0	7.0	5.511	1.4917
SMEAN(CN2)	1970	1.0	7.0	5.390	1.7272
SMEAN(CN3)	1970	1.0	7.0	5.200	1.3728
SMEAN(CN4)	1970	1.0	7.0	5.202	1.3990
SMEAN(HA1)	1970	1.0	7.0	4.062	1.4236
SMEAN(HA2)	1970	1.0	7.0	4.100	1.3060
SMEAN(HA3)	1970	1.0	7.0	3.594	1.2569
SMEAN(HA4)	1970	1.0	7.0	4.011	1.2543
SMEAN(HA5)	1970	1.0	7.0	3.721	1.2382
SMEAN(HA6)	1970	1.0	7.0	3.686	1.2728
SMEAN(NT1)	1970	1.0	7.0	1.227	.9464
SMEAN(NT2)	1970	1.0	7.0	1.128	.6296
SMEAN(NT3)	1970	1.0	7.0	1.208	.7690
SMEAN(NT4)	1970	1.0	7.0	1.136	.6372
SMEAN(CS1)	1970	1.0	7.0	3.344	1.1628
SMEAN(CS2)	1970	1.0	7.0	3.190	1.1659
SMEAN(CS3)	1970	1.0	7.0	3.259	1.2570
SMEAN(CS4)	1970	1.0	7.0	3.289	1.1359
SMEAN(CS5)	1970	1.0	7.0	3.015	1.1907
SMEAN(CD1)	1970	1.0	7.0	3.730	1.1401
SMEAN(CD2)	1970	1.0	7.0	3.283	1.0830
SMEAN(CD3)	1970	1.0	7.0	3.109	1.0419
SMEAN(CD4)	1970	1.0	7.0	2.827	1.1218
SMEAN(CD5)	1970	1.0	7.0	3.212	1.0515
SMEAN(KQ1)	1970	1.0	7.0	3.392	1.1510
SMEAN(KQ2)	1970	1.0	7.0	3.110	1.2355
SMEAN(KQ3)	1970	1.0	7.0	3.381	1.1618
SMEAN(KQ4)	1970	1.0	7.0	3.337	1.1226
SMEAN(KQ5)	1970	1.0	7.0	3.028	1.3147
SMEAN(KE3)	1970	1.0	7.0	3.579	1.0762
SMEAN(KE4)	1970	1.0	7.0	3.257	1.2915
SMEAN(PB1)	1970	1.0	7.0	2.966	1.3888
SMEAN(PB2)	1970	1.0	7.0	3.226	1.3592
SMEAN(PB3)	1970	1.0	7.0	4.564	1.4693
SMEAN(PB4)	1970	1.0	7.0	4.661	1.3505
SMEAN(PB5)	1970	1.0	7.0	4.873	1.3413
SMEAN(PB6)	1970	1.0	7.0	5.003	1.2432
SMEAN(PB7)	1970	1.0	7.0	4.005	1.3388

SMEAN(PB8)	1970	1.0	7.0	4.073	1.4663
SMEAN(PB9)	1970	1.0	7.0	4.719	1.3372
SMEAN(PB10)	1970	1.0	7.0	4.693	1.3355
SMEAN(IV1)	1970	1.0	7.0	3.265	1.7265
SMEAN(IV2)	1970	1.0	7.0	4.490	1.5124
SMEAN(IV3)	1970	1.0	7.0	3.461	1.7206
SMEAN(IV4)	1970	1.0	7.0	4.353	1.5973
SMEAN(IV5)	1970	1.0	7.0	4.421	1.5420
SMEAN(Cog1)	1970	1.0	7.0	2.960	1.4896
SMEAN(Cog2)	1970	1.0	7.0	2.951	1.4578
SMEAN(Cog3)	1970	1.0	7.0	2.893	1.4883
SMEAN(Cog4)	1970	1.0	7.0	2.997	1.5045
SMEAN(Cog5)	1970	1.0	7.0	2.922	1.5144
SMEAN(Con1)	1970	1.0	7.0	2.350	1.4048
SMEAN(Con2)	1970	1.0	7.0	2.425	1.4862
SMEAN(Con3)	1970	1.0	7.0	2.341	1.4438
SMEAN(Aff1)	1970	1.0	7.0	2.120	1.5282
Valid N (listwise)	1970				

Appendix B - Tests for Kurtosis and Skew						
	Skewness		Kurtosis		z-score Skewness	z-score Kurtosis
	Statistic	Std. Error	Statistic	Std. Error		
SMEAN(CN1)	-1.245	0.055	1.027	0.11	-22.64	9.34
SMEAN(CN2)	-1.19	0.055	0.377	0.11	-21.64	3.43
SMEAN(CN3)	-0.862	0.055	0.375	0.11	-15.67	3.41
SMEAN(CN4)	-0.849	0.055	0.262	0.11	-15.44	2.38
SMEAN(HA1)	-0.295	0.055	-0.286	0.11	-5.36	-2.60
SMEAN(HA2)	-0.279	0.055	0.16	0.11	-5.07	1.45
SMEAN(HA3)	-0.087	0.055	0.215	0.11	-1.58	1.95
SMEAN(HA4)	-0.245	0.055	0.259	0.11	-4.45	2.35
SMEAN(HA5)	-0.147	0.055	0.206	0.11	-2.67	1.87
SMEAN(HA6)	-0.068	0.055	0.098	0.11	-1.24	0.89
SMEAN(HA7)	-0.306	0.055	-0.094	0.11	-5.56	-0.85
SMEAN(NT1)	4.659	0.055	23.027	0.11	84.71	209.34
SMEAN(NT2)	6.445	0.055	46.24	0.11	117.18	420.36
SMEAN(NT3)	4.433	0.055	21.811	0.11	80.60	198.28
SMEAN(NT4)	6.194	0.055	43.828	0.11	112.62	398.44
SMEAN(CS1)	-0.179	0.055	0.134	0.11	-3.25	1.22
SMEAN(CS2)	-0.07	0.055	0.005	0.11	-1.27	0.05
SMEAN(CS3)	0.143	0.055	-0.088	0.11	2.60	-0.80
SMEAN(CS4)	-0.091	0.055	0.286	0.11	-1.65	2.60
SMEAN(CS5)	0.093	0.055	-0.043	0.11	1.69	-0.39
SMEAN(CD1)	0.169	0.055	0.777	0.11	3.07	7.06
SMEAN(CD2)	0.078	0.055	0.584	0.11	1.42	5.31
SMEAN(CD3)	0.161	0.055	0.774	0.11	2.93	7.04
SMEAN(CD4)	0.364	0.055	0.486	0.11	6.62	4.42
SMEAN(CD5)	0.056	0.055	0.707	0.11	1.02	6.43
SMEAN(KQ1)	0.18	0.055	0.746	0.11	3.27	6.78
SMEAN(KQ2)	0.423	0.055	0.518	0.11	7.69	4.71
SMEAN(KQ3)	0.191	0.055	0.74	0.11	3.47	6.73
SMEAN(KQ4)	0.131	0.055	0.785	0.11	2.38	7.14
SMEAN(KQ5)	0.741	0.055	0.662	0.11	13.47	6.02
SMEAN(KE3)	-0.018	0.055	1.418	0.11	-0.33	12.89
SMEAN(KE4)	0.487	0.055	0.502	0.11	8.85	4.56
SMEAN(PB1)	0.581	0.055	0.101	0.11	10.56	0.92
SMEAN(PB2)	0.332	0.055	-0.094	0.11	6.04	-0.85
SMEAN(PB3)	-0.384	0.055	-0.313	0.11	-6.98	-2.85
SMEAN(PB4)	-0.395	0.055	0.001	0.11	-7.18	0.01
SMEAN(PB5)	-0.431	0.055	0.086	0.11	-7.84	0.78
SMEAN(PB6)	-0.3	0.055	0.283	0.11	-5.45	2.57
SMEAN(PB7)	-0.115	0.055	0.038	0.11	-2.09	0.35
SMEAN(PB8)	-0.121	0.055	-0.226	0.11	-2.20	-2.05
SMEAN(PB9)	-0.346	0.055	0.165	0.11	-6.29	1.50
SMEAN(PB10)	-0.405	0.055	0.347	0.11	-7.36	3.15
SMEAN(IV1)	0.186	0.055	-1.143	0.11	3.38	-10.39
SMEAN(IV2)	-0.27	0.055	-0.549	0.11	-4.91	-4.99
SMEAN(IV3)	0.054	0.055	-1.056	0.11	0.98	-9.60
SMEAN(IV4)	-0.571	0.055	-0.4	0.11	-10.38	-3.64
SMEAN(IV5)	-0.654	0.055	-0.18	0.11	-11.89	-1.64
SMEAN(Cog1)	0.134	0.055	-1.06	0.11	2.44	-9.64
SMEAN(Cog2)	0.11	0.055	-1.047	0.11	2.00	-9.52

SMEAN(Cog3)	0.212	0.055	-1.003	0.11	3.85	-9.12
SMEAN(Cog4)	0.136	0.055	-1.07	0.11	2.47	-9.73
SMEAN(Cog5)	0.221	0.055	-1.005	0.11	4.02	-9.14
SMEAN(Con1)	0.883	0.055	-0.07	0.11	16.05	-0.64
SMEAN(Con2)	0.829	0.055	-0.329	0.11	15.07	-2.99
SMEAN(Con3)	0.9	0.055	-0.16	0.11	16.36	-1.45
SMEAN(Aff1)	1.158	0.055	0.074	0.11	21.05	0.67

Appendix C – Tests of Normality

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
SMEAN(CN1)	.251	1970	.000	.832	1970	.000
SMEAN(CN2)	.279	1970	.000	.808	1970	.000
SMEAN(CN3)	.220	1970	.000	.896	1970	.000
SMEAN(CN4)	.221	1970	.000	.895	1970	.000
SMEAN(HA1)	.207	1970	.000	.938	1970	.000
SMEAN(HA2)	.241	1970	.000	.923	1970	.000
SMEAN(HA3)	.197	1970	.000	.929	1970	.000
SMEAN(HA4)	.263	1970	.000	.904	1970	.000
SMEAN(HA5)	.206	1970	.000	.928	1970	.000
SMEAN(HA6)	.186	1970	.000	.938	1970	.000
SMEAN(HA7)	.220	1970	.000	.933	1970	.000
SMEAN(NT1)	.531	1970	.000	.256	1970	.000
SMEAN(NT2)	.518	1970	.000	.209	1970	.000
SMEAN(NT3)	.513	1970	.000	.299	1970	.000
SMEAN(NT4)	.517	1970	.000	.222	1970	.000
SMEAN(CS1)	.238	1970	.000	.904	1970	.000
SMEAN(CS2)	.224	1970	.000	.904	1970	.000
SMEAN(CS3)	.166	1970	.000	.936	1970	.000
SMEAN(CS4)	.221	1970	.000	.905	1970	.000
SMEAN(CS5)	.194	1970	.000	.906	1970	.000
SMEAN(CD1)	.229	1970	.000	.914	1970	.000
SMEAN(CD2)	.206	1970	.000	.907	1970	.000
SMEAN(CD3)	.185	1970	.000	.899	1970	.000
SMEAN(CD4)	.162	1970	.000	.909	1970	.000
SMEAN(CD5)	.210	1970	.000	.893	1970	.000
SMEAN(KQ1)	.207	1970	.000	.905	1970	.000
SMEAN(KQ2)	.156	1970	.000	.921	1970	.000
SMEAN(KQ3)	.201	1970	.000	.909	1970	.000
SMEAN(KQ4)	.215	1970	.000	.897	1970	.000
SMEAN(KQ5)	.182	1970	.000	.911	1970	.000
SMEAN(KE3)	.273	1970	.000	.848	1970	.000
SMEAN(KE4)	.172	1970	.000	.922	1970	.000
SMEAN(PB1)	.169	1970	.000	.922	1970	.000
SMEAN(PB2)	.142	1970	.000	.936	1970	.000
SMEAN(PB3)	.158	1970	.000	.941	1970	.000
SMEAN(PB4)	.164	1970	.000	.938	1970	.000

SMEAN(PB5)	.163	1970	.000	.931	1970	.000
SMEAN(PB6)	.165	1970	.000	.911	1970	.000
SMEAN(PB7)	.205	1970	.000	.937	1970	.000
SMEAN(PB8)	.192	1970	.000	.942	1970	.000
SMEAN(PB9)	.162	1970	.000	.931	1970	.000
SMEAN(PB10)	.167	1970	.000	.928	1970	.000
SMEAN(IV1)	.195	1970	.000	.908	1970	.000
SMEAN(IV2)	.144	1970	.000	.945	1970	.000
SMEAN(IV3)	.168	1970	.000	.923	1970	.000
SMEAN(IV4)	.180	1970	.000	.916	1970	.000
SMEAN(IV5)	.196	1970	.000	.910	1970	.000
SMEAN(Cog1)	.236	1970	.000	.884	1970	.000
SMEAN(Cog2)	.241	1970	.000	.882	1970	.000
SMEAN(Cog3)	.223	1970	.000	.884	1970	.000
SMEAN(Cog4)	.226	1970	.000	.891	1970	.000
SMEAN(Cog5)	.218	1970	.000	.887	1970	.000
SMEAN(Con1)	.254	1970	.000	.838	1970	.000
SMEAN(Con2)	.255	1970	.000	.839	1970	.000
SMEAN(Con3)	.258	1970	.000	.828	1970	.000
SMEAN(Aff1)	.311	1970	.000	.741	1970	.000

a. Lilliefors Significance Correction

Appendix D – Trimmed Mean

Descriptives					
			Statistic	Std. Error	(Mean vs Trimmed)
SMEAN(CN1)	Mean		5.511	.0336	
	95% Confidence Interval for Mean	Lower Bound	5.446		
		Upper Bound	5.577		
	5% Trimmed Mean		5.650		14%
SMEAN(CN2)	Mean		5.390	.0389	
	95% Confidence Interval for Mean	Lower Bound	5.314		
		Upper Bound	5.467		
	5% Trimmed Mean		5.541		15%
SMEAN(CN3)	Mean		5.200	.0309	
	95% Confidence Interval for Mean	Lower Bound	5.139		
		Upper Bound	5.261		
	5% Trimmed Mean		5.294		9%
SMEAN(CN4)	Mean		5.202	.0315	
	95% Confidence Interval for Mean	Lower Bound	5.141		
		Upper Bound	5.264		
	5% Trimmed Mean		5.297		9%
SMEAN(HA1)	Mean		4.062	.0321	
	95% Confidence Interval for Mean	Lower Bound	4.000		
		Upper Bound	4.125		
	5% Trimmed Mean		4.092		3%
SMEAN(HA2)	Mean		4.100	.0294	
	95% Confidence Interval for Mean	Lower Bound	4.042		
		Upper Bound	4.158		
	5% Trimmed Mean		4.124		2%
SMEAN(HA3)	Mean		3.594	.0283	
	95% Confidence Interval for Mean	Lower Bound	3.539		
		Upper Bound	3.650		
	5% Trimmed Mean		3.590		0%
SMEAN(HA4)	Mean		4.011	.0283	
	95% Confidence Interval for Mean	Lower Bound	3.956		
		Upper Bound	4.067		
	5% Trimmed Mean		4.033		2%
SMEAN(HA5)	Mean		3.721	.0279	
	95% Confidence Interval for Mean	Lower Bound	3.666		
		Upper Bound	3.776		
	5% Trimmed Mean		3.731		1%
SMEAN(HA6)	Mean		3.686	.0287	
	95% Confidence Interval for Mean	Lower Bound	3.630		
		Upper Bound	3.743		
	5% Trimmed Mean		3.689		0%
SMEAN(HA7)	Mean		4.072	.0308	
	95% Confidence Interval for Mean	Lower Bound	4.011		
		Upper Bound	4.132		
	5% Trimmed Mean		4.102		3%
SMEAN(NT1)	Mean		1.227	.0213	
	95% Confidence Interval for Mean	Lower Bound	1.185		
		Upper Bound	1.269		
	5% Trimmed Mean		1.031		-20%
SMEAN(NT2)	Mean		1.128	.0142	
	95% Confidence Interval for Mean	Lower Bound	1.101		
		Upper Bound	1.156		

	5% Trimmed Mean		1.014		-11%
SMEAN(NT3)	Mean		1.208	.0173	
	95% Confidence Interval for Mean	Lower Bound	1.174		
		Upper Bound	1.242		
	5% Trimmed Mean		1.051		-16%
SMEAN(NT4)	Mean		1.136	.0144	
	95% Confidence Interval for Mean	Lower Bound	1.108		
		Upper Bound	1.164		
	5% Trimmed Mean		1.018		-12%
SMEAN(CS1)	Mean		3.344	.0262	
	95% Confidence Interval for Mean	Lower Bound	3.292		
		Upper Bound	3.395		
	5% Trimmed Mean		3.351		1%
SMEAN(CS2)	Mean		3.190	.0263	
	95% Confidence Interval for Mean	Lower Bound	3.139		
		Upper Bound	3.242		
	5% Trimmed Mean		3.185		-1%
SMEAN(CS3)	Mean		3.259	.0283	
	95% Confidence Interval for Mean	Lower Bound	3.203		
		Upper Bound	3.314		
	5% Trimmed Mean		3.236		-2%
SMEAN(CS4)	Mean		3.289	.0256	
	95% Confidence Interval for Mean	Lower Bound	3.239		
		Upper Bound	3.339		
	5% Trimmed Mean		3.286		0%
SMEAN(CS5)	Mean		3.015	.0268	
	95% Confidence Interval for Mean	Lower Bound	2.962		
		Upper Bound	3.067		
	5% Trimmed Mean		2.987		-3%
SMEAN(CD1)	Mean		3.730	.0257	
	95% Confidence Interval for Mean	Lower Bound	3.679		
		Upper Bound	3.780		
	5% Trimmed Mean		3.710		-2%
SMEAN(CD2)	Mean		3.283	.0244	
	95% Confidence Interval for Mean	Lower Bound	3.235		
		Upper Bound	3.331		
	5% Trimmed Mean		3.281		0%
SMEAN(CD3)	Mean		3.109	.0235	
	95% Confidence Interval for Mean	Lower Bound	3.063		
		Upper Bound	3.155		
	5% Trimmed Mean		3.103		-1%
SMEAN(CD4)	Mean		2.827	.0253	
	95% Confidence Interval for Mean	Lower Bound	2.778		
		Upper Bound	2.877		
	5% Trimmed Mean		2.797		-3%
SMEAN(CD5)	Mean		3.212	.0237	
	95% Confidence Interval for Mean	Lower Bound	3.166		
		Upper Bound	3.259		
	5% Trimmed Mean		3.208		0%
SMEAN(KQ1)	Mean		3.392	.0259	
	95% Confidence Interval for Mean	Lower Bound	3.341		
		Upper Bound	3.442		
	5% Trimmed Mean		3.374		-2%
SMEAN(KQ2)	Mean		3.110	.0278	
	95% Confidence Interval for Mean	Lower Bound	3.055		
		Upper Bound	3.165		

	5% Trimmed Mean		3.061		-5%
SMEAN(KQ3)	Mean		3.381	.0262	
	95% Confidence Interval for Mean	Lower Bound	3.330		
		Upper Bound	3.433		
	5% Trimmed Mean		3.362		-2%
SMEAN(KQ4)	Mean		3.337	.0253	
	95% Confidence Interval for Mean	Lower Bound	3.287		
		Upper Bound	3.386		
	5% Trimmed Mean		3.323		-1%
SMEAN(KQ5)	Mean		3.028	.0296	
	95% Confidence Interval for Mean	Lower Bound	2.969		
		Upper Bound	3.086		
	5% Trimmed Mean		2.951		-8%
SMEAN(KE3)	Mean		3.579	.0242	
	95% Confidence Interval for Mean	Lower Bound	3.531		
		Upper Bound	3.627		
	5% Trimmed Mean		3.568		-1%
SMEAN(KE4)	Mean		3.257	.0291	
	95% Confidence Interval for Mean	Lower Bound	3.199		
		Upper Bound	3.314		
	5% Trimmed Mean		3.203		-5%
SMEAN(PB1)	Mean		2.966	.0313	
	95% Confidence Interval for Mean	Lower Bound	2.905		
		Upper Bound	3.028		
	5% Trimmed Mean		2.887		-8%
SMEAN(PB2)	Mean		3.226	.0306	
	95% Confidence Interval for Mean	Lower Bound	3.166		
		Upper Bound	3.286		
	5% Trimmed Mean		3.177		-5%
SMEAN(PB3)	Mean		4.564	.0331	
	95% Confidence Interval for Mean	Lower Bound	4.499		
		Upper Bound	4.629		
	5% Trimmed Mean		4.604		4%
SMEAN(PB4)	Mean		4.661	.0304	
	95% Confidence Interval for Mean	Lower Bound	4.602		
		Upper Bound	4.721		
	5% Trimmed Mean		4.702		4%
SMEAN(PB5)	Mean		4.873	.0302	
	95% Confidence Interval for Mean	Lower Bound	4.813		
		Upper Bound	4.932		
	5% Trimmed Mean		4.931		6%
SMEAN(PB6)	Mean		5.003	.0280	
	95% Confidence Interval for Mean	Lower Bound	4.948		
		Upper Bound	5.057		
	5% Trimmed Mean		5.048		5%
SMEAN(PB7)	Mean		4.005	.0302	
	95% Confidence Interval for Mean	Lower Bound	3.945		
		Upper Bound	4.064		
	5% Trimmed Mean		4.017		1%
SMEAN(PB8)	Mean		4.073	.0330	
	95% Confidence Interval for Mean	Lower Bound	4.008		
		Upper Bound	4.138		
	5% Trimmed Mean		4.081		1%
SMEAN(PB9)	Mean		4.719	.0301	
	95% Confidence Interval for Mean	Lower Bound	4.660		
		Upper Bound	4.778		

	5% Trimmed Mean		4.768		5%
SMEAN(PB10)	Mean		4.693	.0301	
	95% Confidence Interval for Mean	Lower Bound	4.634		
		Upper Bound	4.752		
	5% Trimmed Mean		4.746		5%
SMEAN(IV1)	Mean		3.265	.0389	
	95% Confidence Interval for Mean	Lower Bound	3.188		
		Upper Bound	3.341		
	5% Trimmed Mean		3.216		-5%
SMEAN(IV2)	Mean		4.490	.0341	
	95% Confidence Interval for Mean	Lower Bound	4.423		
		Upper Bound	4.556		
	5% Trimmed Mean		4.520		3%
SMEAN(IV3)	Mean		3.461	.0388	
	95% Confidence Interval for Mean	Lower Bound	3.385		
		Upper Bound	3.537		
	5% Trimmed Mean		3.424		-4%
SMEAN(IV4)	Mean		4.353	.0360	
	95% Confidence Interval for Mean	Lower Bound	4.283		
		Upper Bound	4.424		
	5% Trimmed Mean		4.392		4%
SMEAN(IV5)	Mean		4.421	.0347	
	95% Confidence Interval for Mean	Lower Bound	4.352		
		Upper Bound	4.489		
	5% Trimmed Mean		4.468		5%
SMEAN(Cog1)	Mean		2.960	.0336	
	95% Confidence Interval for Mean	Lower Bound	2.895		
		Upper Bound	3.026		
	5% Trimmed Mean		2.912		-5%
SMEAN(Cog2)	Mean		2.951	.0328	
	95% Confidence Interval for Mean	Lower Bound	2.886		
		Upper Bound	3.015		
	5% Trimmed Mean		2.907		-4%
SMEAN(Cog3)	Mean		2.893	.0335	
	95% Confidence Interval for Mean	Lower Bound	2.827		
		Upper Bound	2.959		
	5% Trimmed Mean		2.838		-6%
SMEAN(Cog4)	Mean		2.997	.0339	
	95% Confidence Interval for Mean	Lower Bound	2.931		
		Upper Bound	3.064		
	5% Trimmed Mean		2.949		-5%
SMEAN(Cog5)	Mean		2.922	.0341	
	95% Confidence Interval for Mean	Lower Bound	2.855		
		Upper Bound	2.989		
	5% Trimmed Mean		2.863		-6%
SMEAN(Con1)	Mean		2.350	.0317	
	95% Confidence Interval for Mean	Lower Bound	2.288		
		Upper Bound	2.412		
	5% Trimmed Mean		2.243		-11%
SMEAN(Con2)	Mean		2.425	.0335	
	95% Confidence Interval for Mean	Lower Bound	2.359		
		Upper Bound	2.491		
	5% Trimmed Mean		2.321		-10%
SMEAN(Con3)	Mean		2.341	.0325	
	95% Confidence Interval for Mean	Lower Bound	2.277		
		Upper Bound	2.405		

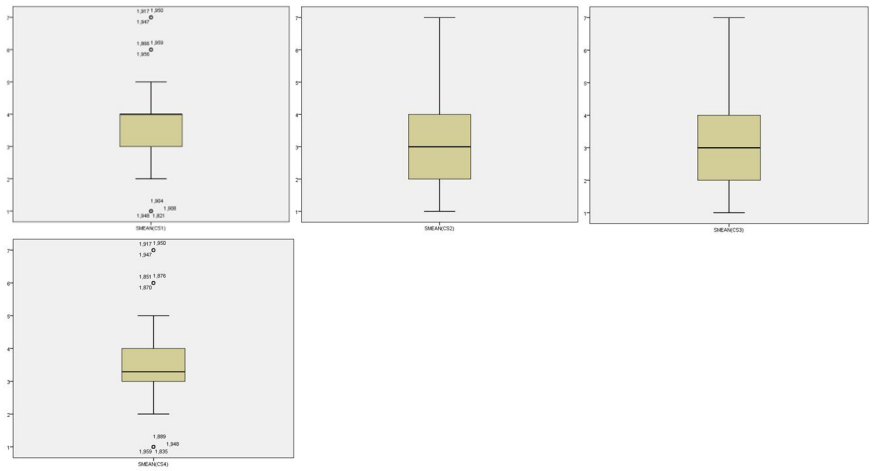
	5% Trimmed Mean		2.234		-11%
SMEAN(Aff1)	Mean		2.120	.0344	
	95% Confidence Interval for Mean	Lower Bound	2.053		
		Upper Bound	2.188		
	5% Trimmed Mean		1.990		-13%

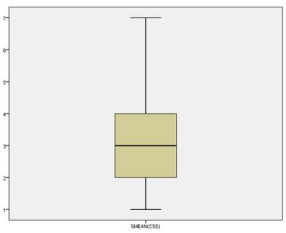
Appendix E – Boxplot Diagrams by Construct

Conformity to Norms

Network Tie

Identification

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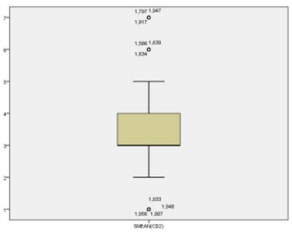
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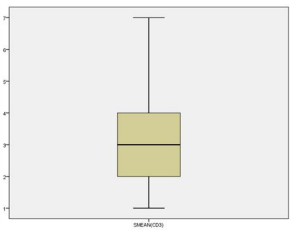
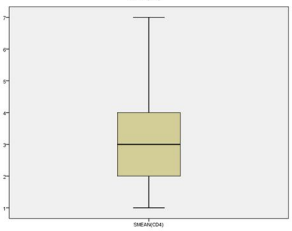

SMEAN(CD3)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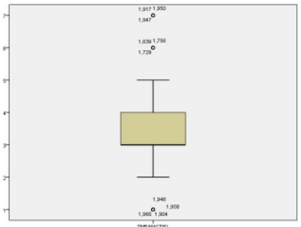
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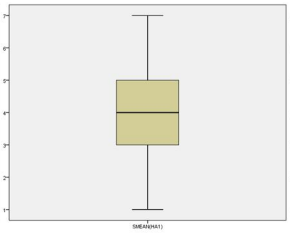
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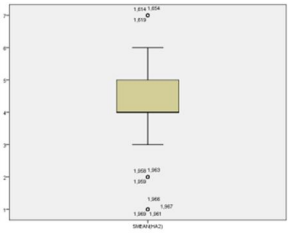
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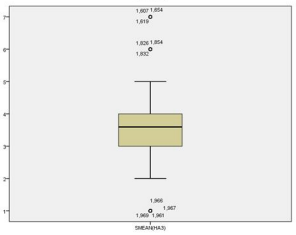
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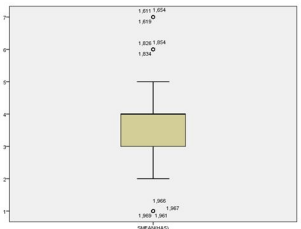
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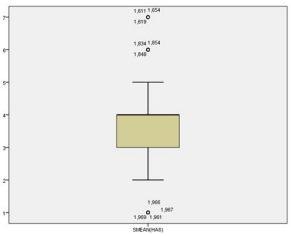
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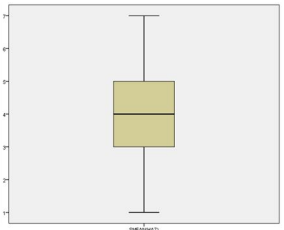
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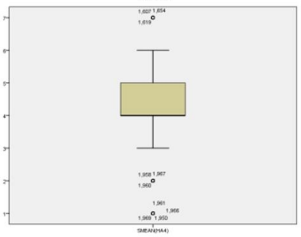
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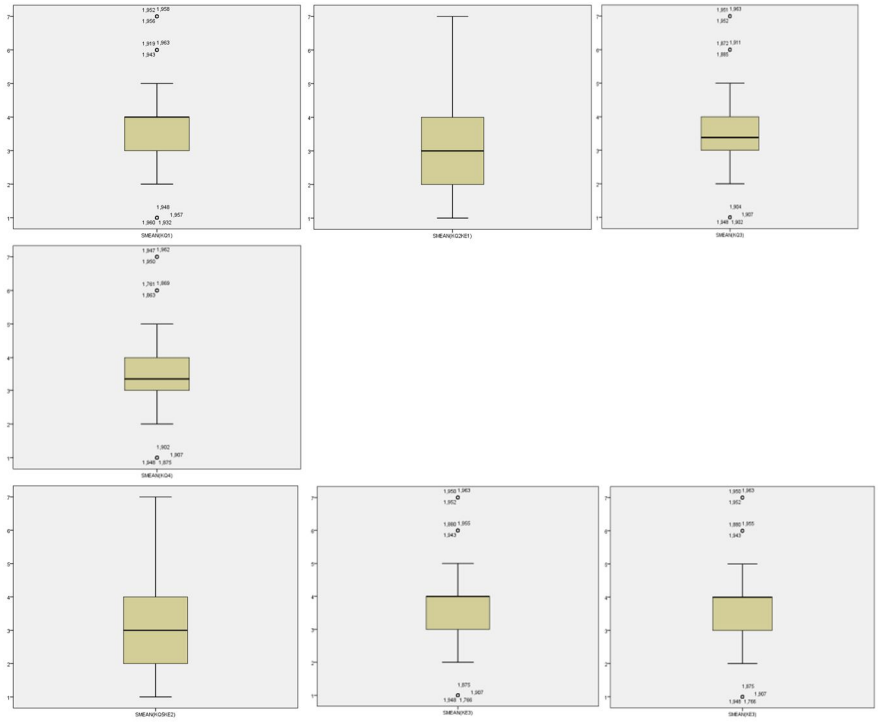

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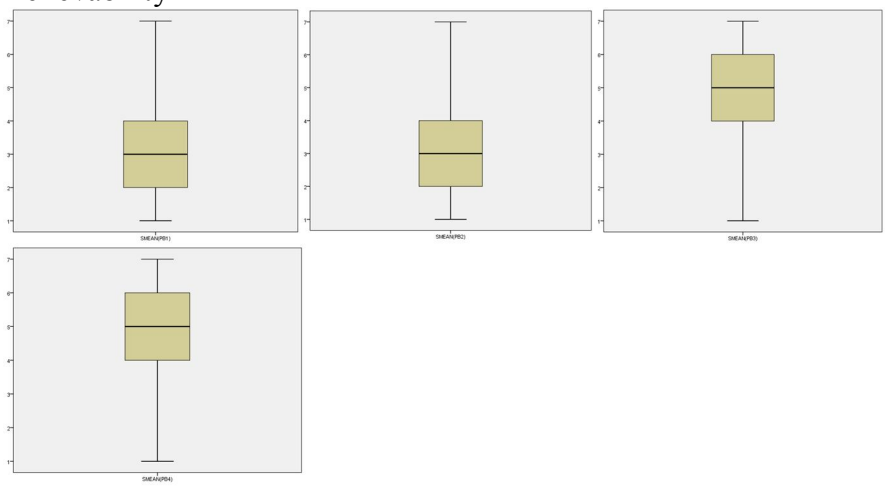

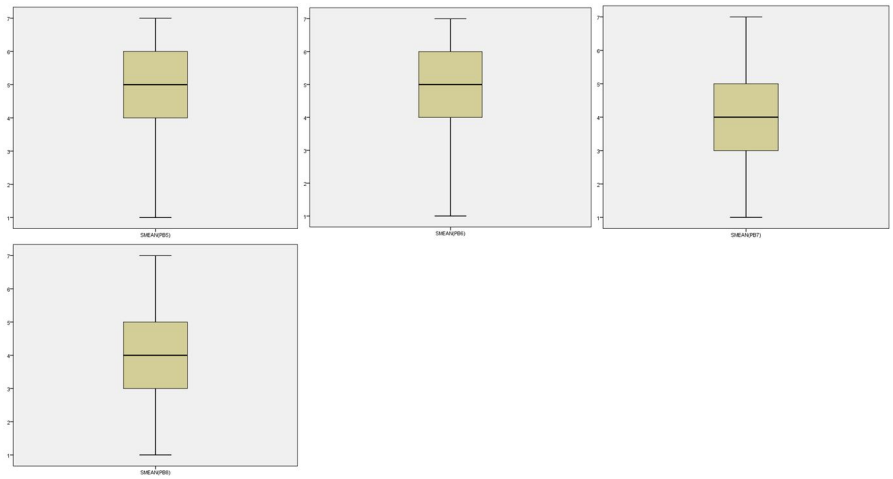

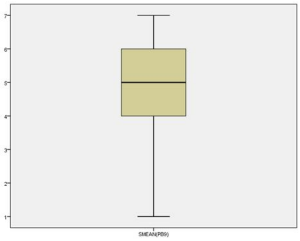
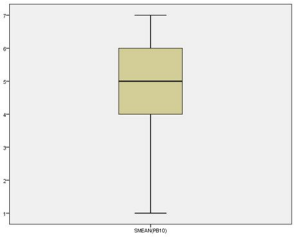

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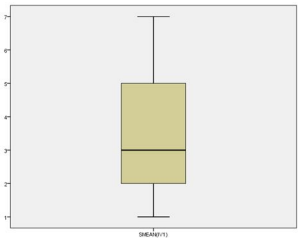
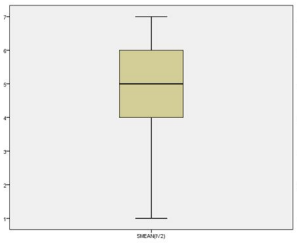
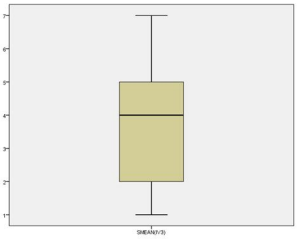
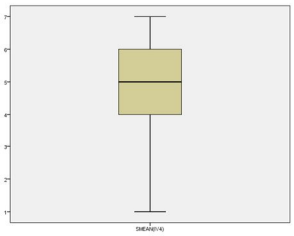
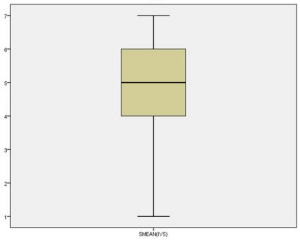
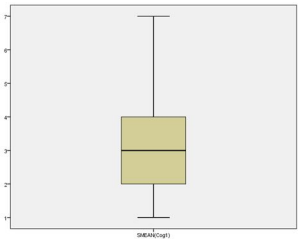
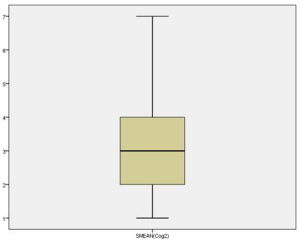
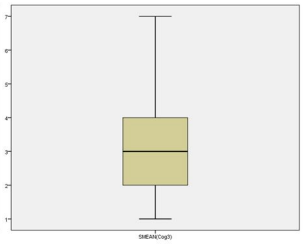
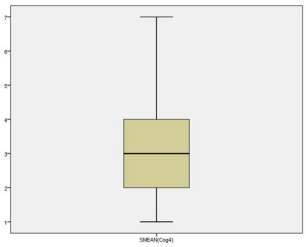
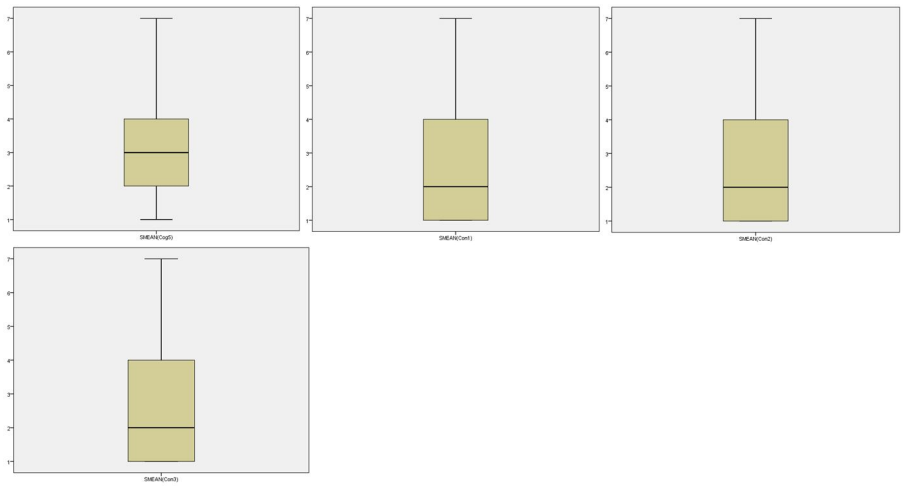
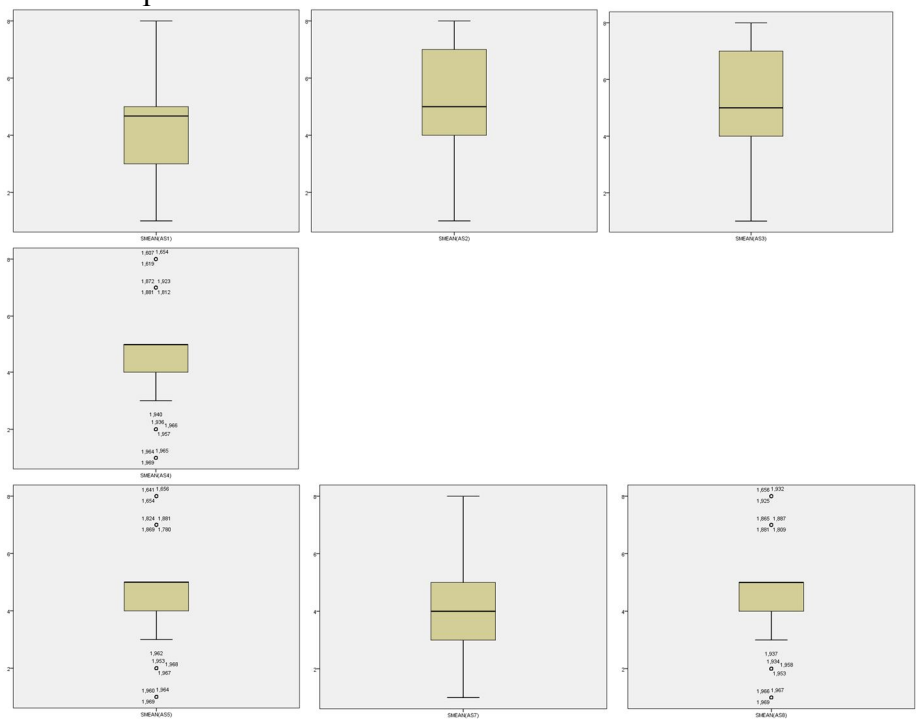






Influence

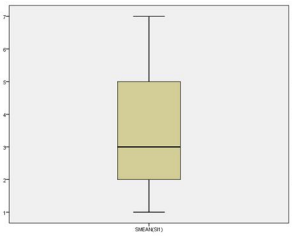







Forum Scepticism



Susceptibility to Influence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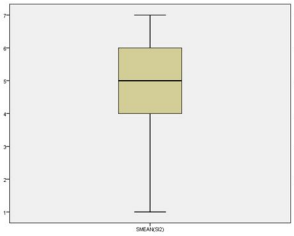
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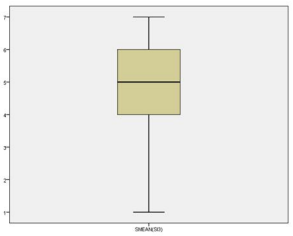
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2
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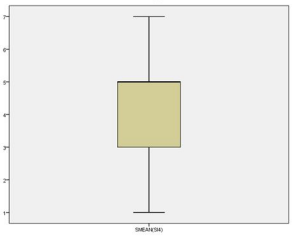
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6
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SMEAN(S4)

Appendix F – Demographic Frequency Tables

Table F1 - Gender.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	1539	78.2	78.3	78.3
	Female	426	21.6	21.7	100.0
	Total	1965	99.8	100.0	
Missing	System	4	.2		
Total		1969	100.0		

Table F2 - Age

% of Sample	Age Group	Year Born
2.29	Over 71	1920-1939
9.97	62-71	1940-1949
13.78	52-61	1950-1959
15.92	42-51	1960-1969
17.04	32-41	1970-1979
14.50	22-31	1980-1989
26.50	21 or under	1990-1999

Table F3 - Highest level of education.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than High School	90	4.6	4.6	4.6
	High School / 'A' Levels	664	33.7	33.7	38.3
	Undergraduate	570	28.9	28.9	67.2
	Postgraduate	645	32.8	32.8	100.0
	Total	1969	100.0	100.0	

Table F4 - Political outlook.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Right of Centre	404	20.5	20.5	20.5
	Centre	459	23.3	23.3	43.9
	Left of Centre	636	32.3	32.3	76.2
	None	468	23.8	23.8	100.0
	Total	1967	99.9	100.0	
Missing	System	2	.1		
Total		1969	100.0		

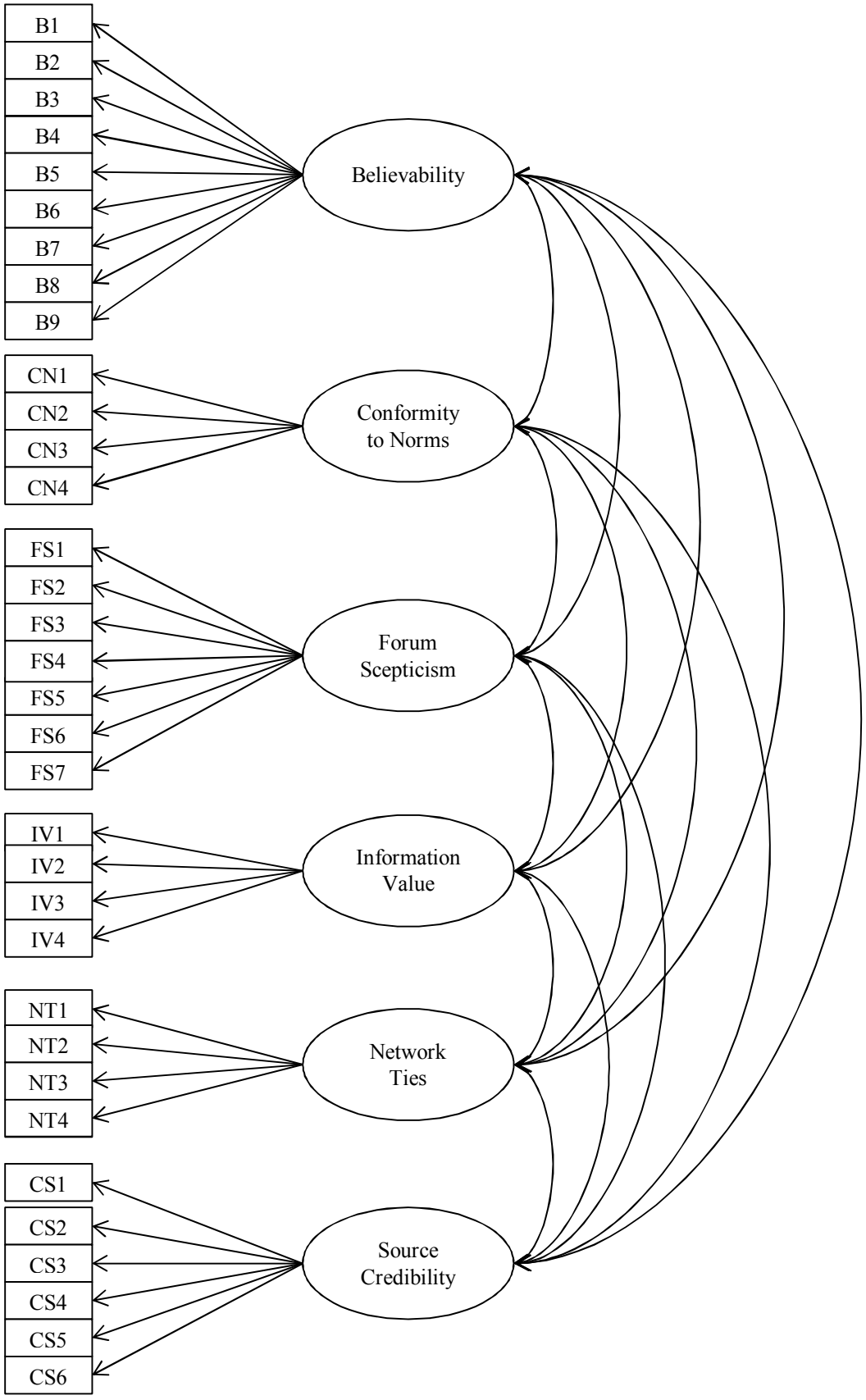
F5 - Occupation.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Higher managerial, administrative or professional	361	18.3	18.4	18.4
	Intermediate managerial, administrative or professional	455	23.1	23.2	41.6
	Supervisory, clerical and junior management	146	7.4	7.4	49.0
	Skilled manual worker	87	4.4	4.4	53.4
	Unskilled manual worker	34	1.7	1.7	55.2
	Pensioner	124	6.3	6.3	61.5
	Other	756	38.4	38.5	100.0
	Total	1963	99.7	100.0	
Missing	System	6	.3		
Total		1969	100.0		

F6 - Combined annual household income.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Much lower than average for my country	122	6.2	6.2	6.2
	Lower than average for my country.	255	13.0	13.0	19.2
	About average for my country.	606	30.8	30.9	50.1
	Above average for my country.	707	35.9	36.0	86.1
	Much higher than average for my country.	273	13.9	13.9	100.0
	Total	1963	99.7	100.0	
Missing	System	6	.3		
Total		1969	100.0		

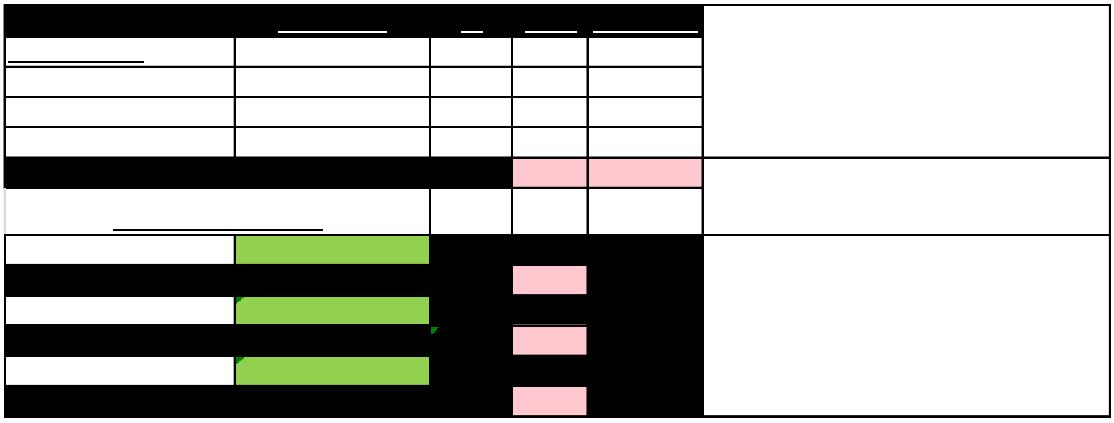
Appendix G - Confirmatory Factor Analysis



Appendix H

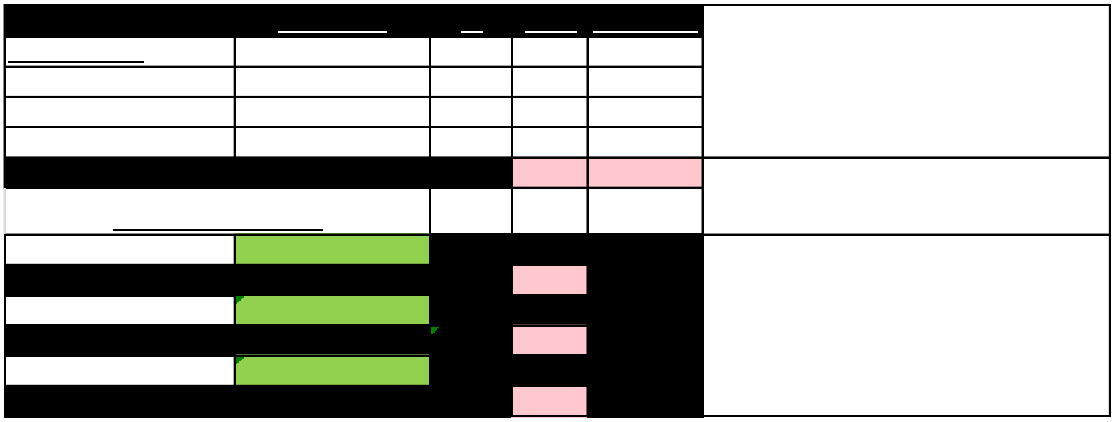
Threshold Model - Content

Groups: Post A and Post B



Threshold model - Susceptibility

Groups: Hi-Lo Sus



Source: Statwiki © Weatherhead School of Management at Case Western Reserve University Cleveland Ohio

http://statwiki.kolobkreations.com/wiki/Main_Page Accessed 12/10/12